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ABSTRACT

Strategies are examined for utilizing the mass communications media to improve standards of living within developing nations. This report, addressed to decision-makers in developing nations and the Agency for International Development (AID), is designed to assist them in planning their improvement communications programs. A general introduction is followed by three chapters providing a critical examination of available communication techniques, an analytic overview of specific educational goals, and an explanation of relevant change and decision-making strategies. The conclusion lists ten basic steps for creating a communication/education program for a technologically developing nation. (Author/CHV)

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The Use of Communications Media to Improve the Quality of Life in Technologically Developing Nations: A Strategic Overview

by

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PREFACE

This document deals with "alternative strategies utilizing the communications media...in the fields of nutrition, maternal/child health care, population control, and basic intellectual skill development among rural populations and underdeveloped urban communities." It is based on the hypothesis "that modern communications media can directly and effectively reach both individuals and specific groups within those populations, and at the same time can supply the more traditional channels of communication operating within a community with new sources of information. Strategies formulated hereunder to introduce and use communications media as a development tool will be designed in a manner that will produce the maximum improvement in modes of living for the target populations, but doing so with the minimal disruption of existing productive natural or cultural means of communication between individuals or existing groups."

As the contract specifies, this document is "designed to help AID meet the need for new strategies and new kinds of programs in applying communications technology to development, relating to LDC and AID activities in institution-building, policy development, training, operational project assistance, research and analysis, and administration....

The purpose of these analyses will be to provide a basis for:

1. Optimizing allocation of AID resources -- financial, professional, and institutional.
2. Optimizing allocation of country resources -- financial, professional, and institutional.
3. Indicating essential institutional development activities required to utilize communications technologies for various development purposes.
4. Developing methodologies for decision making on the utility and feasibility of using mass communications technologies."

Five detailed reports covering various aspects of this problem area have been prepared by George Washington University to provide working tools for decision makers and program developers in AID and in less developed countries who will be planning actual programs to use the various instructional technologies.

ACKNOWLEDGMENTS

Since this document represents a conceptual rather than a research approach to the use of mass communications in improving the quality of life in the Third World, no bibliography is included. The authors would,however, like to acknowledge four important sources; the five volume study done for AED at George Washington University entitled Strategies for the Use of Mass Communications Media in the Technologically Developing Nations, a book by Rudy Bretz entitled A Taxonomy of Communications Media, an AED report written by James G. Miller entitled Research and Development Priorities in Instructional Technologies in the Less Developed Countries, and Non-Formal Alternatives to Schooling, a handbook produced by the Center for International Education at the School of Education, University of Massachusetts.

We would also like to thank Professor David R. Evans for his critique of our draft.

CHAPTER I

INTRODUCTION

Throughout the history of man there have been occasional discoveries of such import that they affected not just human activity, but also human thought, over the course of centuries. A good example of this phenomenon in the western world is Francis Bacon's development of the scientific method in the early seventeenth century. Not only did Bacon's systematic mechanism for seeking truth produce long-lasting changes in man's methods of investigating the universe, it also revolutionized the thought processes of the general population. Today, hundreds of years after his death, the average citizen has at least an intuitive sense of this approach to epistemology.

In the late twentieth century we find ourselves squarely in the midst of a knowledge explosion. Over half of all the scientists who have ever lived are still alive today. One might reasonably expect a corresponding increase in the number of culture and thought molding events such as the scientific method. Two candidates have already appeared. One is Sigmund Freud, who first focused attention on the wondrous complexity and terrifying mystery that is the human mind.

The ultimate fate of Freud's psychoanalytic theory is of relatively little consequence. What is important is his suggestion that the clearly visible aspects of a man are analagous to the tip of an iceberg (only a fraction of what is really there), which has already revolutionized the way in which most people think. Concepts such as motivation, attitude, subconscious, pressure, psychological needs, and so on are well accepted factors in modern life. The second such event is cybernetics and systems theory of Ashby, Weiner, Bertalanffy and their colleagues. Researchers are now using computer models for hundreds of natural phenomena, from human thought to the flight of a grasshopper. More and more, the average person tends to view his universe as a system, examining inputs, outputs, and processes even if he does not use these labels. In many ways psychoanalysis and cybernetics have opposite social impact. The former deals in mystery, invisible forces, and uncontrolled power; the latter involves mechanics, quantitative analysis, and an orderly view of natural phenomena. Yet together they are helping to shape the thoughts of entire generations.

The challenge of combining communications technology and education is firmly rooted in both of these culture-shaping events. Effective teaching requires that attention be paid not only to easily perceived human characteristics, but also to hidden forces such as motivation, attitudes, values, volition, needs, etc. The vehicle of mass communications media, on the other hand, implies a systems approach to problem solving. One must analyze input, output, and processes in order to imagine how the media might be used as educational hand maidens. In many ways, then, these fields are representative of twentieth century inquiry.

The specific problem posed by the United States Agency for International Development is simply stated. The objective is to improve the quality of life in developing countries, with particular emphasis on the fields of nutrition, maternal/child health care, population control, and basic intellectual skill development among rural populations and underdeveloped urban communities. The proposed mechanism for achieving this objective is modern communications techniques, particularly the mass media. Communications technology can directly reach both individuals and specific groups within these populations and at the same time can supply the more traditional channels of communications operating within a community with new sources of information. Thus the goal of this paper is to suggest alternative strategies for using communications to improve the quality of life. Such strategies would be relevant to the utility and feasibility of specific communications and educational systems, optimal resource allocation, and requisite institutional development activities.

From the authors' perspective this problem relates to education in its broadest sense. We are not concerned merely with transmitting information, but also with changing attitudes, altering values, inducing motivation, and most importantly affecting behavior. The original Latin root of the word, educere, meant to lead out or to draw out. By focusing on education as a process which draws out, a process resulting in the release of human potential, goals such as the improvement of the quality of life and vehicles such as communications techniques are clearly included in its domain.

Modern technology allows one to reach many people in new ways. Modern pedagogy allows one to teach many people in new ways. These two fields can be profitably combined to achieve results which would have been impossible even ten years ago, but such success requires new vision on the part of government officials, planners, educators, and technicians. The basic purpose of this paper is to specify that vision. We intend to integrate the general state of the art in communication technology and education with modern change strategies. The details of these areas are easily obtained from existing printed and personal sources. Vision, on the other hand, is a rare commodity not easily found on dusty bookshelves. We have, therefore, chosen to focus more on the approach to this problem and the use of existing knowledge than on that knowledge itself.

This paper is divided into three major chapters: a critical examination of available communications techniques, an analytic overview of four specific educational goals subsumed under the phrase, "the quality of life", and an explanation of relevant change and decision making strategies. At the outset, however, we must elucidate two concepts which are keys to our analysis.

First, it is crucial to recognize that defining the quality of life is a multicultural process. If the global village has done anything, it has demonstrated that no one nation or culture has a monopoly on understanding the complex challenge of living. It is, therefore, unrealistic to assume that any country can determine for another what improving the quality of life entails. For this reason we have adopted the term "technologically developing nation" (TDN)

instead of "underdeveloped country," since it describes the material gap between these areas of the world and the United States without implying that Americans are also superior in other aspects of living. We should act on a belief that the technologically developed world has much of value to offer technologically developing nations and much to learn from these same countries. By the same token, we should not assume that everything making up the culture of a TDN is either good or bad. Each party must recognize the contributions offered by the other.

Second, we should adopt the strategy of competing models. Suffice it here to say that there is no way, given the embryonic nature of the fields, to determine a priori whether one particular approach to communications and education is the best possibility. This implies that instead of gambling on just one type of project, AID and TDNs should be willing to fund and test a number of alternative models.

Additional decision-making strategies are elucidated in Chapter 4. Before considering them, however, we will examine the technological and educational implications of mass communications media.

CHAPTER II

A SURVEY OF MASS COMMUNICATIONS TECHNOLOGY

HARDWARE: SPECIFIC OPTIONS

Communications media are more than just technologically sophisticated gimmicks. Their potential ranges far beyond passively supplementing interpersonal educational efforts. To a large extent what one can accomplish and how one can accomplish it is influenced by the communications channels used. Thus it is entirely appropriate to begin our analysis of the role of mass communications in improving the quality of life with an overview of potential media and their implications for education. Our intention is not to explore any of these possibilities in detail, but rather to put them in a perspective that should assist decision makers. Ample description and research concerning each medium is readily available from other sources.

The following taxonomy categorizes communications media along two dimensions: delivery and reception. There are two major delivery modes, mass delivery and individualized delivery. In the former, the same content is communicated to a relatively large number of people (not necessarily at one time). Any tailoring of this content to particular needs must be done peripherally, since everyone sees and/or hears the same program. The latter allows content to be altered to suit different audiences. The same program can be disseminated to a large population, or different subsegments of that population can

receive different types of programs over the same medium. The advantages of the mass delivery mode include its relatively low per capita cost and minimal programming needs (one presentation serves a large audience). Its major disadvantage is its inability to deal simultaneously with the different needs of different populations. The ability to be all things to all people is the major advantage of the individualized delivery mode. The major disadvantage of this strategy is the greater amount of programming needed to realize such potential and the trained supervision which is frequently required for technologically unsophisticated audiences to receive the message.

The second dimension, reception, focuses on two main sensory inputs -- audio and visual -- singly and in combination. Although other senses such as tactile and olfactory can be involved in mass communications (for example, with contour maps or "scratch and smell" advertisements), their potential use in technologically developing nations is of little significance, and they are not examined here. The basic advantage of the audio mode is that it requires no basic literacy to understand. The strengths of the visual is the low cost of many such options and the documented importance of visual cues in learning. The major argument for the audio-visual mode, of course, is that it combines the strengths of the first two possibilities. On the other hand, it suffers the disadvantages of greater complexity and greater cost.

There are obviously other ways to organize potential communications technologies, some of them involving more detailed

TABLE ONE

A Taxonomy of Communications Media

	MASS DELIVERY	INDIVIDUALIZED DELIVERY
VISUAL	print media (books, journals, newspapers, comics, pamphlets) fotonovelas billboards	print media (flash cards, teaching cards, programmed texts, learning activity packages) posters microform (microfilm, microfiche) photographs flip charts slides filmstrips motion pictures: silent postal system (correspondence) flannel boards rubber stamps
AUDIO	radio (broadcast)	radio (two-way) magnetic tapes (reel-to-reel, cassette, cartridges) phonograph records telephone
AUDIO-VISUAL	television (broadcast, cable) radio-vision	television (cartridge, videotape) motion pictures: sound (16 mm, 8 mm, super-8 cartridges, film loops, single-concept films, animations) slide tapes sound-on-slide sound page audio flip teaching machines mobile resource units, village technological centers

differentiation. For example, Rudy Bretz of the Rand Corporation (A Taxonomy of Communication Media, Englewood Cliffs, New Jersey, Educational Technology Publications, 1971) cites seven reception modes: audio-motion-visual, audio-still-visual, audio-semi-motion, motion-visual, still-visual, audio, and print. In other words, Bretz employs a third dimension, motion versus still, which we have not isolated in our categorization. Furthermore, he focuses on the issue of telecommunication versus recording instead of our choice of mass delivery versus individualized delivery (although the two category systems are almost congruent). Another categorization method was proposed by W. Schramm, and is based on classification by generation (i.e., a continuum from traditional to ultra-new possibilities). This system is used by James G. Miller (Research and Development Priorities in Instructional Technologies for the Less Developed Countries, Academy for Educational Development) to organize an extremely comprehensive list of communications technologies.

We have chosen to base our own taxonomy on those factors which are particularly relevant to the specific goal of using mass communications in educational programs to improve the quality of life. Furthermore, our system ignores media actually in use in LDC's (or TDN's), e.g., CAI. In other words, it is a presentation designed especially for analyzing the interface of media and learning in the Third World.

Visual/Mass Delivery. The first possibility in this category involves a spectrum of communications techniques which may be grouped under the label print media. It includes books, pamphlets, newspapers,

and comics. Printed material is often overlooked by planners because of its relative familiarity. Other factors weighing against its use are a literacy requirement (both the ability to read and the ability to interpret symbols and illustrations), the necessity of physically distributing the materials, and their standardized, impersonal nature. Nonetheless it is important not to overlook its potential. In the first place, virtually every technologically developing nation has some capacity to produce printed matter. This is, therefore, a technique that can be adopted with little or no additional capital investment. Software costs are very low, too. Second, most citizens are familiar with the print medium. It is not new, overly complex, or threatening. Third, print requires no elaborate reception/display equipment. Finally, this medium has the highest random accessibility within a program of any considered here. This gives freedom to the learner, facilitates the presentation of difficult material, and makes possible techniques such as programmed instruction.

The use of this technique is recommended, therefore, in the secondary stages of educational programs when a significant percentage of the target population has developed the requisite interpretive skills. The print medium can extend such competence and exercise it frequently enough to prevent the disappearance of newly acquired literacy due to disuse (a problem already encountered in some African countries). Comic books, which rely heavily on pictures as well as text, can be a first step towards educating newly literate populations. Newspapers, especially those written in simple language, can serve in a

subsequent stage. This approach has been used successfully not only in developing nations (Colombia's El Campesino) but also in the United States (in the Laubach adult literacy program). Finally, pamphlets and books can play an important part in advanced stages of a general educational program, if the target population is able to understand them.

One important consideration in developing printed materials, whether textual or pictorial, is extensive pretesting to ensure that the desired information is accurately conveyed. This technique has, for instance, allowed some Central American countries to produce effective, word-free booklets for use with illiterate peoples. Efforts should also be made to use the print media in new, creative ways. For example, a subscription to a basic language newspaper might be given as a reward to persons completing a literacy program in an urban ghetto. Such newspapers could not only provide the subscriber with further education plus important information on available jobs and other topics, it could also serve as a status symbol. This strategy combines continuing education with reinforcement. In a similar matter, participants in an advanced literacy project could be given a book. Upon demonstrating that they had finished it, they would be allowed to trade it for another. Recipients might also be encouraged to trade books among themselves. This strategy provides a useful reward for learning.

Not all mass delivery visual media require the ability to read (although most need other types of interpretive skills discussed in Chapter III). A good example is the fotonovela. Based on

photographic comic books used extensively in Latin America, this is a series of still pictures assembled to communicate simple concepts and facts with little or no text. Such a system improves visual literacy while simultaneously communicating basic information. For example, a fotonovela could relate to maternal/child health. Initial photographs would show someone drawing water out of a visibly polluted source, drinking it or cooking with it, and contracting an obvious disease. A second set of illustrations would show the same person obtaining water from a reliable source and end with a picture of a healthy family.

A final possibility in this category is the use of billboards. Again, pictures can be substituted for text for the sake of simplicity. Billboards can be placed along major roads or in strategic places within a village or urban subcenter. They can be single-concept (illustrating one fact or idea) or arranged in a series similar to the popular Burma Shavé signs which once dotted the United States. Here is a low-cost medium which has the potential of reaching a large number of people over time. A given learner would be repeatedly exposed to a billboard placed, for instance, along a frequently used road. Such reinforcement does not require any individual discipline or self-direction.

Visual/Individualized Delivery. The print media also offer possibilities for the individualized delivery of visual communications. Flash cards are an excellent example of this. Each card illustrates one fact or poses one problem. They can be employed by field workers,

or class monitors in reinforcing ideas and themes introduced through other techniques. A related possibility is teaching cards. These involve three levels of literacy: a simple picture illustrating a basic idea, a very simple text explaining the picture, and a more complicated text giving further details on the back of the card. Teaching cards can assist people with varying educational backgrounds without further modification. Samples are left with an individual learner in the expectation of repeated, self-directed use. Techniques such as this, which can operate independently of external human or technological resources, are particularly helpful in supplying pre-existing, informal communications channels with new information.

Programmed texts are really a combination of the mass and individualized-delivery modes. The same material is given to all potential students, but the method of presentation (involving frequent self-evaluation and optional extra reading) allows each learner to use the text in a particular way. When the target population includes many people who can already read, this option combines the low hardware and software costs of delivery with the potential of the individualized delivery mode to meet the various needs of different people. A final option within this subcategory is the Learning Activity Package (LAP). A LAP is a concise body of multimedia activities presented in an easily understood framework, containing instructions for activities leading towards specified skills or information and allowing each student to work at an individually appropriate rate, style, and level. This approach is especially relevant to the area of primary skill development.

Posters can be strategically placed throughout specific rural and/or urban villages so as to present repeatedly the same basic information to random groups of people. This option is similar to billboards but can operate on a smaller, more local scale with greater individualization. Posters use graphics and/or texts, operating as an independent program or supplementing other communications techniques. They have been successful in many TDNs, particularly for transmitting health messages.

The microform medium is a system of information storage and retrieval which serves as an alternative to on-paper print. Microfilm and microfiche are the two most common types of microform. They offer easy storage, quick retrieval, and cheap distribution (since they are inexpensive to mail). Unfortunately, their high production costs and the relatively complex machinery necessary to view or project them make microforms generally unsuitable for mass education programs in TDNs. The one area where this technique could be practical would be as part of advanced education in an urban setting. If a target population is geographically concentrated and fully literate, the cost of the necessary reproduction technologies may be justifiable.

Photographs (including single-concept photos, picture-sets, and fotonovelas) can be used for individualized as well as mass delivery. The only difference would be that different photographs would be used in different areas to meet different needs. A variety of modern reproduction techniques permit the rapid, low-cost creation of these materials. This approach has the special advantage of not requiring complicated projection facilities.

Another possibility is the flip chart. This is a series of photographs, illustrations, and perhaps words arranged in sequential order and presented by flipping pages. It, too, avoids complex support technology and is relatively inexpensive to produce. On the other hand, flip charts often necessitate the use of human instructors or monitors.

Another important alternative within this category is slides. Since it is shown to individuals or small groups, a given slide program can be modified to meet the special needs of a specific population. The modularization strategy is useful here. That is, core material can be centrally programmed and supplemented with situation-specific pictures produced either in a regional center or by the clients themselves. This would permit, for example, a slide show on population control to start with basic pictures illustrating the advantages of controlling fertility and then move to pictures of faces and locations which the specific audience would recognize. Such a program could help make a potentially threatening subject seem more familiar.

A slide sequence can be easily rearranged. This is advantageous in that it allows on-location editing of general materials, but disadvantageous in that it is possible to randomize accidentally an ordered program. A different alternative, the filmstrip, has the opposite configuration. It is safe from unintentional disorganization, but it is also impossible to modify in the field. Filmstrips are somewhat easier to project than slides (requiring less complicated equipment) and are cheaper to reproduce in quantity. Nonetheless, these two visual media share a set of common disadvantages. Both require a viewing location, a mechanical projector, and an electrical source

(although there exists at least one inexpensive, battery-powered projector for slides, filmstrips, and transparencies). When used in a visual-only mode, both usually need to be accompanied by a human commentator. Finally, like all film media, slides and filmstrips are difficult to store safely over a long period of time. Especially in tropical climates, colors tend to run and the film base may become brittle and scratched.

Motion pictures are primarily an audio-visual medium, and will be discussed in that section. It should be noted here, however, that silent movies are an acceptable visual, individualized-delivery technique. In general, this medium is similar in potential to that of filmstrips, with the added disadvantage of more complicated projection equipment.

Another mass communications technology that is frequently ignored is the postal system. Most countries can boast of adequate mails which can be used to transmit printed information to target populations. This medium has the advantage of being a two-way channel. Recipients can mail back completed assignments or questions to a central office, later receiving answers and feedback. One example is the correspondence courses which have been used throughout the world. Another is Colombia's Radio Sutatenza, which employs twenty literate campesinos to answer approximately two hundred letters per day from rural radio school students.

Finally, there is a medium of rubber stamps, another option which has yet to be given serious attention. The "hardware" involved is mass-produced, molded rubber figures and figurines. They are made by the same process as rubber stamps used on business forms, letters and envelopes.

They are trimmed and glued to wooden blocks. A typical set of stamps includes fifty to one hundred different pictures (human figures in various postures, plus various geometrical shapes). They are used in local centers, either by field workers or by the learners themselves, to provide individualized instructional material. Students can produce stories and cartoons as an exercise in visual literacy, beginning by filling in the expression on pre-stamped illustrations and progressing to entirely original creations. If reading and writing are being taught, learners can also add simple texts. Illiterate people can use rubber stamps as a form of "note taking," producing a record which can be kept for future reference. This medium provides a low-cost instructional mechanism which insures an active role for the learner.

Audio/mass delivery. In this category, one technique stands alone: conventional radio. This is perhaps the most frequently used communications technique in TDN mass education ventures and for good reason. It was the first telecommunication medium, and it is still the cheapest to operate. It can be heard over thousands of miles (especially with the aid of satellites), on inexpensive transistor sets requiring no external power source and little maintenance. More and more people are becoming familiar with radio, looking to it with respect and enthusiasm as a source of pleasure and information. Centrally-produced radio shows can be used both for direct educational purposes and for indirect teaching in conjunction with entertainment. Radio can be used by itself or along with other programs involving interpersonal contact. Its main disadvantage, of course, is that it is basically a one-way medium which is difficult to individualize and which provides, when used alone, little reinforcement for the learner.

Audio/individualized delivery. Two-way radio communication has been successfully used in Australia to educate outback children (the famous "Classroom of the Air"). In fact, the isolated students even participate in radio plays and offer "extracurricular" activities. This medium allows an exchange of questions and answers, to say nothing of personal reinforcement. On the other hand, its technological requirements make it impractical in most rural areas.

There are, however, other possibilities for individualizing the audio mode. One is magnetic tape: reel-to-reel, cartridge, or cassette. The latter alternative offers many of the same advantages as radio in that the machinery required is reliable, fairly simple to operate, and low cost. Tapes can be easily produced for specific needs and specific people. They can be used alone or in conjunction with other media.

Another possibility is the phonograph record. Again, the technology involved is relatively uncomplicated, and there are even record players which can be operated on batteries. Once a master disc is produced duplicate copies can be created for mere pennies, making the cost much lower than magnetic tapes. Records have the additional advantage of being random access, whereas tapes require a great deal more skill if the learner is expected to skip from part to part. On the other hand, records do not last so long as tapes.

Finally, there is the telephone. Many countries have a reasonably adequate telephone system, at least in urban areas. Its use as a basic instructional medium depends on such tools as

the telelecture, where telephone lines are used to carry a live or recorded presentation to a small group or groups. Because of its interactive potential, the telephone can also serve as an important supplement to other educational programs. For example, in a city listeners to a studio-produced radio show can phone in questions and comments during a live broadcast.

Audio-visual/mass delivery. Conventional television is pre-eminent in this category. There are two types: broadcast and cable. Broadcasts are limited to short distances unless microwave or satellite transmission is used, whereas cable can be employed to bring television into poor-reception areas. In many ways this is an ideal medium, for it combines more ways of representing information than any other. On the other hand, it suffers the multiple disadvantages of expense, reliance on electric power, significant maintenance needs, and complex programming. Because of its status and potential, television is often the first objective of a TDN which is developing new educational programs. We would suggest, however, that its use be de-emphasized except in countries where adequate technology already exists. The large capital investment and the many practical problems simply make television not always an impractical first step, especially since educational goals can often be met through other media.

An alternative is radiovision, an audio broadcast combined with visual materials on location. This may be less complicated to produce than television, but the delivery of visual materials can be costly and difficult. For instance, a newspaper of the air could be developed. Listeners would have printed material in front of them and hear it over the radio. This could be a way of drilling literacy while communicating various kinds of important information.

The British Open University is a good example of the cooperative use of several of the media already discussed. Here television serves as a basic mechanism for communicating ideas through lectures, movies, slides, etc. The postal system is used to provide interpersonal communication between the central office and the students in the field. The project has even gone so far as to convince the postal department to waive all postage charges on correspondence from its students, serving as an interesting motivation for participation and an example of creative media strategies.

Audio-visual/individualized delivery. The development of videotape (used with videotape recorders and videocartridge machines) permits television to be employed as an individualized delivery audio-visual medium. Not only can this technique serve in conjunction with broadcast transmissions, it also allows the distribution of a wide variety of programs to various target populations. Furthermore, there is the secondary possibility of client-produced videotape, which can help provide an active role in the educational process for learners. Although this medium is not much more difficult to use than audiotape, it does involve greater programming challenges and higher equipment cost. It is, therefore, subject to the same cost-effectiveness limitations as conventional television and should not be planned as a first step in education through mass communication.

The medium of motion pictures (with sound) includes 16 and 8 mm films, super-8 cartridges, film loops, single-concept films, and animations. Although production complexity is commensurate with videotape, the cost of the film itself is far less and the machinery necessary to reproduce it is easier to operate, making this frequently

a more practical medium. It has many of the same advantages of videotape, such as the potential for individualization and client-produced programs.

Audio presentations on magnetic tape may be combined with visual presentations on film to produce slide-tapes or sound filmstrips. Synchronization is accomplished either by a projectionist using a printed guide or auditory cues on the tape itself, or by more complicated electronic means. This medium provides multiple channels for information transmission at a lower cost than television. It is of particular help in conjunction with nonprofessional field workers who do not have extensive backgrounds in a given subject area. Unfortunately, this technique prohibits easy editing for the needs of one particular group; the sequence and commentary are fairly immutable.

A related option is sound-on-slides. In this system 2 x 2-inch slides are placed in larger holders or cartridges that carry an area of magnetic material for recording. A standard slide projector is modified to include an audio head to reproduce narration previously recorded on each transparency. The advantage of this approach is that the sequence of slides may be changed without destroying synchronization. This permits some individualization of a centrally produced audio-visual program. On the other hand, the technology required is more complex and more expensive than for slide-tapes, making sound-on-slide a less practical alternative for TDNs.

The same mechanism that permits sound-on-slide allows the sound page, where an audio presentation is recorded in a spiral track on the backside of a printed page. The two options are similar in potential, but the sound page is limited to the individual presentation mode.

Another simple A-V medium is the audio flip, which combines a cassette tape with a flip chart. As with sound-tapes or radio-vision, this alternative permits simultaneous presentation of visual illustrations with audio explanation. Because it is based on the printed flip chart, the audio flip is fairly low cost and simple. It might profitably be used where other technologies are too expensive to be considered.

Teaching machines are not a truly different medium, but rather a combination of many of the audio-visual possibilities discussed in this section. What distinguishes this option is the use of A-V technologies in conjunction with self-contained viewing/listening units. In other words, a teaching machine permits the learner to access information when he wants and at the rate he wants. Programming for teaching machines often uses the branching technique, allowing students to evaluate themselves and obtain additional or remedial information in areas where their comprehension is weak. Essentially, then, teaching machines permit the use of audio-visual media without requiring a trained monitor to be present.

Finally, mention should be made of mobile resource units and village technological centers. Like the teaching machine, these

ideas depend on a special combination of existing technologies. In this case, a number of communications media in the individualized delivery mode (visual, audio, and audio-visual) are assembled in one location to permit easy access by learners. The approach permits the coordination of a constellation of programs, all designed to meet a specific educational objective(s). The mobile resource unit involves bringing such a multimedium package directly to urban or rural locations via a bus, a truck, or even an airplane. When the budget permits and there is a sufficient concentration of potential students, the package can be permanently placed in a central technological center to increase accessibility.

In this context, it is useful to remember that there is no perfect medium any more than there is one perfect teacher or one perfect curriculum. Each particular technique has its own potentials and limitations. Effective use of communications technology in education requires a statement of objectives, an analysis of the most appropriate means to meet those objectives, and a choice of media based on both relevance to the goals and cost. In many respects the items listed in Table One are building blocks, which can be combined and rearranged to create new structures with new potential. Resource centers are one means of packaging the resulting cluster of media and programs.

HARDWARE: GENERAL CONSIDERATIONS

It is not sufficient simply to analyze each mass communications medium available to TDNs. In order to make decisions about which technologies to use, other factors must be taken into consideration. Before turning to the question of programming, we will, therefore, examine the three most important of these issues: type of reception, type of impact, and technological feasibility.

There are two possible types of reception. An individual can receive communications alone. For example, a rural villager could listen to a radio broadcast in the privacy of his home. The possible advantages of this mode of reception include privace for the learner, consequent reduced threat, and minimal disruption to normal schedules. The same villager, on the other hand, could receive the radio program in the company of other people. This might be under the auspices of a special group convened to listen to the broadcast or a social club which incorporates the broadcast as part of its normal activities. Here the major factor is reinforcement. A great deal of evidence indicates that learning is more effective when it is supported by the approbation of other people. Furthermore, group presentations easily allow the use of field workers to supplement and extend the basic media-based message. Still another alternative is a setting not directly related to the educational task. For example, a billboard or television show could be displayed in a village marketplace. Many people would see it in conjunction with normal activities. This strategy is used in Israel, where state radio broadcasts are heard on public busses. If such shows were devoted to educational topics, a large "captive" audience would be reached.

The second general consideration in choosing specific mass communication techniques is whether or not they are to be used for direct or indirect impact. Direct impact refers to the use of a medium solely for an educational purpose. For instance, a film on proper nutritional techniques could be produced and shown to a social club in an urban subcenter. If potential learners decide to attend the showing, it will provide maximum impact in minimum time. Such motivation is frequently lacking, however. In this case, media can be used indirectly. The educational message would be secondary to some other purpose, usually entertainment. The Familia Gomez radio soap opera in Colombia is a good example of this approach. People listen to the broadcast for enjoyment, but it includes specific examples of proper nutritional and health procedures. Thus the audience, whether or not it expects to do so, learns from the show. Indirect impact can be used not only to communicate facts, but also to motivate. A radio drama might consistently demonstrate that families practicing child spacing live healthier, more satisfying lives than families who do not. The importance of family planning can thereby be communicated without recourse to direct, potentially threatening appeals. This would pave the way for later medium messages concerning the specifics of population control. Indirect impact programs are frequently the most important and successful part of a communications/education strategy.

Mass media can also be used to supply more traditional channels of communication already operating in a given population with new sources of information. This involves a special type of indirect

peer learning. An individual who experiences a program on maternal/child health may well communicate some of the ideas and information thus obtained to her friends. An effective media project can be symbolized, therefore, as a tree. The original presentation itself is the trunk and the initial listeners or viewers are the branches stemming from that trunk. Each of these limbs, in turn, can sprout new branches; these represent communication through interpersonal channels.

Many of the techniques listed in Table One can most profitably be used in conjunction with small groups assisted by a monitor or field worker. His purpose is to help organize the group, to reinforce success and attendance, to answer questions, and to provide feedback to programmers. Monitors are often recruited without regard to the location in which they will be operating. A more powerful alternative, however, is to recruit this type of worker from the target population itself, using the media as a training mechanism. One advantage of using indigenous nonprofessionals is one of understanding and trust. Research clearly demonstrates that a group is more likely to listen formally and informally to someone who is familiar. The same person is likely to appreciate the particular needs, problems, and potentials of the audience. This function can best be assumed, therefore, by an individual who is close to the target population in language, culture, geographical background, and perhaps even age. Other advantages of community nonprofessionals are their relatively low cost and the fact that they are likely to remain in

the village or urban center, thereby providing program continuity. In essence, this is a practical way to enhance direct and indirect educational impact.

An alternative to near-peer nonprofessionals would be the use of multipliers. These are trained professionals who because of their background and community position come in contact with large numbers of people in a way that generates respect and trust. This category might involve doctors, nurses, veterinarians, government administrators, social workers, technicians, agricultural advisors, home demonstrators, community action promoters, food dealers, sanitation inspectors, etc. When such people complement media presentations, they add their own expertise to the communication without requiring additional training. They often provide their own clientele, individuals within the target population with whom they have already had ample contact. Finally, their advice is likely to be accepted as educated and trustworthy. Such professionals can, therefore, multiply the impact of a media program in terms of audience size and attention.

Another type of indirect impact involves the nuclear or extended family. When one teaches a parent, one also teaches a child, since children look to parents as their first educators. Thus a project designed to develop basic literacies might do well to focus on the illiterate parents in a target population. Not only will these parents be exposed to new intellectual skills, but so will their children. Indeed, children can provide motivation for the parents. The adult who sees that his offspring will read may well want to possess the same skill. The most important parent is the mother, since she is

her child's first teacher. This suggests, for example, a radio program specifically designed to teach mothercraft. Women could listen to the broadcast in their own homes or in special groups, learning basic intellectual skills, proper nutrition techniques, good health practices, and perhaps even basic family planning methods. Much of this information would, in turn, be directly and indirectly to the children. A peer or multiplier serving as a monitor for group sessions could also visit each home and stimulate the mother in applying what she has learned.

It should not be forgotten that as children learn from parents, parents also learn from their offspring. Another valid strategy would focus on the children themselves. A child who was exposed to the dangers of drinking polluted water, perhaps through the vehicle of an entertainment program where a hero figure refused to do anything so dangerous, might well bring pressure to bear on his parents to change their own practices. There is also the possibility of parents and children learning together. One of the myths of education which inhibits proper use of communications media is that different age groups must always learn in different ways, at different times, at different places. There is no real reason why some approaches cannot be relevant to both children and parents. If broadcast over the radio or television or made available on cassette tapes or flip charts, such programs could be used within the home itself. Family members could reinforce each other and perhaps even help answer questions.

Finally, the media can indirectly achieve educational impact through integration with other techniques and vehicles such as the school, the community, and the culture. It is fallacious to assume that technology is always limited to supplementing a human teacher. It is equally fallacious to believe that media can singly accomplish everything. In the field of child education, for instance, mass communications can provide a powerful motive for success in school by exposing students to the concrete advantages which they can obtain in their own lives through basic education. Another program could fill in the gaps in informal education within a community. Perhaps one village teaches mechanical and color-coding literacy as part of its normal activities, but ignores visual literacy. This implies that communications media might focus specifically on visual literacy without trying to repeat information already available through other sources.

The third overall factor which must be considered in developing strategies for the use of media is technological feasibility. This includes both what is currently possible within a TDN and what is potentially feasible. Television provides the best example of this issue. There is too often a tendency to rush headlong into a program to build a working television system from scratch for the purposes of education. Not only does this necessitate significant capital investment, but it requires a cadre of trained support personnel, sufficient television receivers and a method for distributing them, and significant maintenance capability. All of this may simply be

beyond the means of a given nation. One key decision point, therefore, in choosing communications techniques is whether or not a given medium can be implemented with a reasonable investment and adequate expectation of successful support. Let us here reiterate our basic view that it is far more realistic first to concentrate on available communications technologies, developing new media only when they are necessary for the attainment of particular educational goals. The list of possibilities in Table One is sufficiently broad to ensure most programs to improve the quality of life can be realized without resorting to expensive new media systems. It should also be noted that many possibilities require little if any technological and financial support, and should be given primary consideration even though less appealing than others from the point of view of sophistication and gadgetry.

Of course impact and reception options also affect the choice of communications media to attack specific educational goals in specific developing nations. Assume, for example, that a project budget allowed for either the development of a radio-based educational broadcast system (including the distribution and maintenance of receivers, but not including any field workers) or the use of a wide variety of individualized delivery, audio-visual media (such as movies, slide tapes, audio flips, etc.) incorporated into mobile resource centers and buttressed by a staff of trained professionals and community non-professionals. Further assume that the budget would not allow both of these options. Here the choice would ultimately rest on those two factors. For instance, if all participants in this media program will

be relatively new learners, emphasis should be placed on the second approach, which involves group reinforcement. If, on the other hand, the population has been exposed to previous educational ventures, the radio (which can communicate a great deal of information in many ways, both directly and indirectly) may be the better choice. Thus developing communications strategies involves more than just picking the medium which is technologically "right"; it also involves consideration of the potential impact and practicality of each medium.

PROGRAMMING

Once specific communications media have been chosen to improve the quality of life in a technologically developing nation, the next problem is developing programs to be disseminated through them. The most common strategy is the creation of a single programming facility staffed by trained professionals who produce sophisticated, high-quality materials for use throughout the country. This is certainly one legitimate alternative. This often leads to efficient quality control and impressive products. But it suffers from major disadvantages. In the first place, materials prepared at one central location may well be irrelevant to the needs of a particular target population. This is especially true in countries which include a wide variety of cultures, languages, and/or classes. Secondly, many TDNs are short of trained support personnel. Finally, there is little evidence to show that the polish of a media presentation has much to do with its educational effectiveness. Indeed, some of the most

successful Third World mass communications programs have been relatively unsophisticated by American standards. The centrally produced, high-quality media program will probably have an important role in any overall national strategy to improve the quality of life. On the other hand, it will most likely not need to be supported by other programming mechanisms in order to be both practical and effective.

Three alternatives exist to the central programming. The first is the regional strategy. Essentially, this means that every target population is served by a separate programming operation which can meet its special challenges. The geographical location of such a facility is of little importance. In many cases it can be situated in a major city in order to derive technological and personnel benefits. The key is that it should be relatively free to tailor programs as necessary. For instance, a project designed to reach both urban poor and rural villagers might benefit from having two programming operations (conceivably joined under one umbrella organization). The one could concentrate on city survival skills, basic literacy, and perhaps even limited job training. It could assume existing familiarity with the problems and some of the potentials of city life. The other could focus more on agricultural needs as they would pertain to a rural village. The nation of Zaire offers another practical illustration. Rising urban population and decreasing rural population require different family planning approaches. In the cities the emphasis must be on the advantages of smaller families and the techniques of child spacing. In the countryside, the focus needs shift to the disadvantages of urban migration and the preservation of fertility through control of venereal disease. A single approach simply cannot meet both needs.

A second alternative is modularization. It involves a single programming operation designing core programs, which are then edited and expanded in regional programming facilities or in the field. For example, the hypothetical developing nation mentioned in the last paragraph could commission a basic series of slides and filmstrips on major health problems. Regional facilities could then add to these programs using specific examples drawn from either urban or rural settings and including concerns relevant to each of these populations. In many ways the modularization strategy offers the best of both worlds. It incorporates the high quality and relatively low cost of central programming while ensuring some degree of individualization.

The third possibility is client-produced materials: flip charts, videotapes, photographs, rubber stamps, and so on. This approach has the benefit of active learner involvement, something which is of particular importance for people who are new students. It usually helps not only to communicate information, but also to motivate and to assist in retention. Returning to the health example, a field worker could assemble a group of villagers in an existing social center or even a special health class. He could offer a brief explanation of a desirable practice, such as the safe disposal of human waste. This presentation might be buttressed by the media. Afterwards the villagers could be guided in the use of rubber stamps to create illustrations of the principle of safe waste disposal. The materials thus produced become a record of the class, to which the

learners would refer in the future. In some programs every session is accompanied by such an activity, involving the use of rubber stamps or the coloring of printed pictures. At the end of a lesson series, the completed booklet is given to the student as a diploma. Not only does this provide a status symbol and a tangible reward, it allows the learners to be far more effective in teaching their friends and thus facilitates indirect, peer-based education.

Even within the context of centrally produced programs, there are still a wide variety of options available to the planner. One of the most important is the possibility of obtaining materials from other countries to supplement original productions. Television can illustrate this point. It has already been shown that one major problem with the use of television in TDN educational projects is producing adequate programs, a complicated and difficult task. Undoubtedly any country willing to make an investment in this particular medium will find a way to provide some original programming. But it is equally likely that there will not be sufficient capacity to use the medium to its fullest extent. The result can be many hours when the medium is not used at all. Some of this slack can be taken up by repeat broadcasting. This is an important strategy in itself, since the role of repetition in learning, especially with relatively unsophisticated students, is clearly documented. Nonetheless, there is no getting around the fact that another way is needed to fill the unused time which represents wasted resources.

One way of effectively using these hours is by obtaining television programs from other countries. There are, of course, problems involved in such a venture. Interestingly enough, the risk seems highest when the programs which are obtained are directly educational. For example, some efforts to transplant Sesame Street (which has had significant success within the United States) to other nations are said by some to have met with only limited success or outright failure. Its content and presentation methods are quite culture-specific and consequently must be modified for other parts of the world. Some educational programs avoid this risk, especially when the subject-matter is general and the presentation is relatively simple. An entirely different approach is obtaining entertainment programs from other countries and applying them to educational tasks.

At the simplest level such international sharing of programs begins with entertainment in the hope of motivating viewers to use the medium more frequently, eventually exposing them to educational programming. American situation comedies, for example, have found a ready market in other nations; indeed, the financial health of the U. S. television industry depends to a large extent on such exports. A popular comedy or drama could be followed immediately by a direct educational presentation in the expectation that much of the audience would stay tuned and begin learning. A similar result could be achieved with radio by borrowing popular programs on audio tape. Game shows would be still another possibility.

It is also possible to use such borrowed materials in ways which, although not solely educational, have more direct educational benefits. For example, some game shows may reinforce mathematical or visual literacy. The formats of other game shows might be adopted, too. For example, one could produce a Nigerian version of "What's My Line" using people with professions or skills which have direct bearing on improving the quality of life in that country. Combining written subtitles with a dubbed soundtrack in television entertainment might assist in reading instruction.

In addition to the issue of how to accomplish programming, there is also the major question of what should be programmed. Here again vision is required to use effectively all of the potential of mass communications. For example, it is important to avoid the mistake of seeing television as a mechanical substitute for a human teacher. Such an attitude results in video-taped lectures. Possibly the only thing duller than attending a lecture in person is having to watch it on a television screen. The United States is just now beginning to experiment with alternatives. Sesame Street is a good example. It makes significant use of repetition, color, animation, fantasy, the manipulation of time (slow and fast motion), and similar techniques in order both to motivate its viewers and to communicate information effectively. Although the show itself may not be directly translatable to other societies, effective use of the television medium certainly is. And, of course, this approach is equally applicable to the other technologies listed in Table One.

An important role for mass communications which is frequently overlooked is its ability to assist in changing attitudes. This derives basically from the fact that communications media can place a learner in an entirely new frame of reference. A film loop may demonstrate for a man who has never been out of his village what it is like to fly in an airplane. A set of slides can orient the same villager to the realities of city life, and a companion cassette tape might even include urban sounds. In the attitudinal domain, the benefits of media derive from the fact that resistance to change is often lowered when a person is placed in a new situation where old values and patterns of behavior are clearly irrelevant.

For example, most Latin cultures have a very different concept of punctuality than Anglo-Saxon cultures. One is considered prompt if one arrives at an appointment anywhere within two hours of the scheduled time. Thus many Mexicans are frequently "late" by American standards. On the other hand, Mexican airlines operate strictly on time, and Mexicans traveling on these airlines are punctual by new standards (at least after the first time they miss a plane). Traveling by air is a new situation, and it is easily demonstrated to travelers that traditional concepts of time are inappropriate in this new environment. The media requires changes in some traditions and can help to change attitudes toward old traditions if the TDN wishes such changes to occur.

Another factor in determining content has already been discussed: direct versus indirect programming. Using the media for recreational, cultural, and political purposes can have educational benefits, too. Indeed, indirect education is sometimes the most effective approach

available. For instance, during World War II the U. S. Army found that the best way to train mechanics was to show them movies of Donald Duck assembling gear boxes. Apparently the enjoyment of watching this familiar cartoon character (a direct benefit) was linked with close attention, for sophisticated, technical information was accurately transmitted (an indirect benefit). This supports the hypothesis that media programming must be enjoyable and rewarding from the point of view of the audience if it is to result in effective education. Field testing is often the only way to ensure this, since professionals who are isolated from the target population can rarely be sure of the validity of their theories and assumptions.

A final decision point is familiar programming versus new programming. This is related to the frame of reference phenomenon just discussed. It is important to remember that media do not always have to be directly relevant to the background and experience of the audience. If threat can be reduced to an acceptable level, mass communications can be used as windows on entirely new environments, cultures, behavior patterns, and life styles. Some psychologists hold that animals and human beings instinctively investigate and try to understand their environment. Programs which help them in this or appeal to such instincts can motivate new learners, stimulate their curiosity, engage their attention, and reward them intellectually.

SUMMARY

This chapter has briefly explored a variety of mass communications strategies potentially relevant to technologically developing nations. These possibilities were presented in a taxonomy based on two dimensions: delivery (mass or individualized) and reception (visual, audio, or audio-visual). In general, the mass delivery mode is valuable when the same content must be transmitted to a large, homogeneous population at a low per capita cost. Individualized delivery is preferred when alternative programs are to be disseminated to heterogeneous populations. When possible, the two approaches should be combined. The audio-visual mode is the ideal reception method when there exists within the TDN adequate technological support and semi-literate populations. If media such as television are not feasible, A-V presentations can be created through the combination of individual audio and visual media.

Additional factors governing the choice of communications methods are the type of reception (individual or group), the type of impact (direct or indirect), and technological feasibility. The reception mode must permit reinforcement and active roles for learners. This often requires some use of small groups. Initially, projects should rely heavily on indirect programming as a motivating force. And media which are too costly or complicated for the needs of a specific program should be avoided.

We have also summarized the programming issues involved in using a specific medium. This requires choices between central, regional, and client production, original and borrowed materials, direct and

indirect programming, and familiar versus new programming. Given the advantages and disadvantages of each possibility, we suggest that an overall strategy for mass communications-based education include a variety of those options.

Two major dangers face the decision maker in choosing communications technologies. First, he must avoid the temptation to approach a particular medium as a solution looking for a problem. Decisions should be based on the educational implications of specific content objectives, and should focus first on available delivery systems. Large capital investments towards the creation of new communications methods should be avoided during the initial stages of new communications there has been no chance to test operationally technological and pedagogic assumptions. Second, the decision maker should remember that mass communications media can and should transmit more than just factual information. Noncognitive aspects of learning are equally important, and in some cases they are prerequisites for effective cognitive learning. Thus technological decisions must be made in the context of educational goals. It is to an analysis of such goals that we now turn.

CHAPTER III

IMPROVING THE QUALITY OF LIFE: IMPLICATIONS FOR COMMUNICATIONS STRATEGIES

We have already pointed out that determining exactly what is implied by "quality of life" is a matter for cooperative decision making. Nonetheless, four specific aspects of this concept -- basic intellectual skills, population control, nutrition, and maternal/child health -- will probably be included in any definition. The purpose of this chapter is to examine these general areas with a view towards choosing the best possible communications strategies for attacking them.

In all four of these areas the basic objective of educators is to bring about behavioral change in target populations. Modern learning theory suggests that the most effective way to change actions is to change perception. Behavior is actually the last link on a chain which proceeds from perception to integration to volition and finally to action. For example, in learning to count the first step is perceiving the importance of counting and the skills involved therein. The next task is to analyze these skills in such a way that they become part of existing cognitive structures. The third move is to resolve to use these skills in practice. The final step is to carry out that resolve. It is impossible to directly influence any of the last three

parts of this chain. One cannot, by merely communicating information, be certain of changing cognitive structures, resolution, or action. Efforts to do so invariably result in rote learning. One can, on the other hand, alter perception through communication. This accomplished, the other three steps follow.

The basic approach to these four aspects of improving the quality of life therefore includes changing the perceptions of given target populations. Several requirements pertain. Potential learners must be motivated, they must receive information (both cognitive and affective), and they must be reinforced. No matter what the goal, whether it be nutrition or nuclear science, these basic educational components are necessary.

Thus it is entirely appropriate to deal collectively with all four specific areas. Once the educational implications of improving the quality of life have been derived, it will be possible to add the specific objectives of each problem area and obtain specific educational strategies for attacking them. These strategies can subsequently be combined with particular mass media and particular programming. In making final project decisions, of course, each TDN will take into account its special situation. This includes actual and planned communications systems, manpower requirements, population migration patterns and policy, industrialization plans, rural and urban cultural characteristics, educational and other national goals, local job opportunities, and local educational, family planning, nutrition, and health services already available.

Nonetheless, the basic framework to which these specifics are attached can be generalized across all cultural situations. The outlining of such a framework is the goal of this chapter.

GENERAL EDUCATIONAL CONSIDERATIONS

Educating for specific behavior change involves three content areas: basic capacity development, general (functional) behavior and skill development, and situation-specific skills and behaviors. All three of these are essentially long-range processes. The third area -- specific skills -- can, however, have a short-range component when the first two areas are already being taught. This is informally known as the cookbook approach, where behavior rules are communicated without any real attempt to initiate understanding or attitude change.

Basic capacity development. This level includes fundamental perceptual and cognitive abilities as well as the motivational readiness to develop and use them. It also includes learning skills. Too often, educators treat learning competence as an innate human characteristic rather than an acquired ability. Effective learning requires competence in devising, absorbing, judging, and using new information. At a more general level, it also includes the cognitive ability to integrate new learning into existing mental structures. All of these processes are part of basic intellectual capacity, and all of them must be addressed in order to ensure the success of any educational program. We will pay particular attention to this specific area, since it is a prerequisite to other types of learning and because it illustrates many principles which are equally relevant to general and specific skill development.

It is illegitimate to assume that a given target population, especially a rural village or underdeveloped urban area within a TDN, has already developed these capacities. Thus one of the prime components of any communications project, whatever its specific objectives, is assisting the target population to acquire an interacting cluster of complementary skills, including the ability to grasp certain fundamental concepts and to think abstractly, linguistic development, the use of tools, and the understanding of visual as well as verbal symbols.

Literacy, the most critical component of basic educational skills, is defined by the United Nations as the ability to read, write, and perform simple arithmetic operations. As world attention increasingly focuses on this challenge, world literacy continues to rise. A recent UNESCO report estimated that by the end of the century, 85 percent of the planet's population will be literate in terms of this definition (still leaving approximately 650 million people as hard-core illiterates). Modern technology has also created the demand for still other types of literacy. These, too, must be addressed, not only in order for a nation to be an effective member of the world community, but also if the specific task of using mass communications to improve the quality of life is to be successfully accomplished.

Perhaps the most important skill after the functional literacy defined by the United Nations is visual literacy. This is the ability to understand pictures -- still and motion, realistic and symbolic. A simple anecdote illustrates the dangers of neglecting this competency. Some years ago a rat control program in Southeast Asia made heavy use of movies projected in front of large audiences.

These films had been carefully developed to communicate to rural villagers in a practical, stimulating manner specific techniques for controlling a major health and agricultural problem. Nonetheless, the program failed; behavioral change on the part of the villagers was simply not forthcoming. The problem was finally diagnosed after one member of an audience explained that his village did not have "six-foot rats." Because the target population could not successfully interpret international pictorial styles they were unable to understand a very important message. Prior attention to the area of visual literacy would have allowed these same people to make the connection between the large rats on the screen and the small rats in their homes and fields. It might have ensured the success of the program.

There are at least four additional types of literacy which should be considered in any basic education program. One is mechanical literacy, a working knowledge of machinery. This is not the same as training mechanics since it depends on a more generalized appreciation of the relationship between things in a cause-effect context. Another is mapping and tracking literacy, necessary if maps, diagrams or schematics are to be useful instructional techniques. A third is color coding literacy, a specific type of categorizing behavior which varies from language to language. Finally, there is agricultural literacy, which depends upon minimal arithmetic skills plus the understanding of farming techniques. Again, it is important to

stress that none of these skills require teaching complicated facts. One is considered literate if one has the cognitive framework within which to place future information.

These abilities can have other benefits besides paving the way for successful training programs. All of them implicitly teach logical and causal principles and all of them develop abstracting ability. Ideally, they should not be taught separately but combined in one general learning skills program (except, perhaps, with illiterate adults who may need to approach basic intellectual competencies simultaneously with practical training programs).

Media have obvious potential for literacy programs, even those limited to the UN definition (reading, writing and arithmetic). One excellent example is Colombia's Radio Sutatezana. This broadcast effort combines in a highly successful manner three approaches to the education of rural villagers. In the first place, it offers radio broadcasts covering matters of general interest to the population as well as instruction in literacy. Hundreds of thousands of people are reached, probably due to the motivational benefits of indirect education which have already been discussed. The audience is grouped into a myriad of radio schools, each consisting of six to ten students with a monitor who is drawn from the local community. Three courses are taught, supported by five companion texts which are distributed free and cover topics such as religion, health, and agricultural productivity. Mass and individualized media, direct and indirect programming, are thus combined. The second

component is a special set of schools for the purpose of training the nonprofessional monitors just mentioned plus regional community leaders. Finally, the program includes a special newspaper, "El Campesino," adopted in content and vocabulary to individuals who have recently learned to read. Approximately 70,000 people are reached in this manner, in itself a good example of the effective use of the print media. Italy can boast of a similar, successful televised literacy program in her southern regions.

Motivation is particularly important to basic capacity development because learning skills are at once a prerequisite for other types of education directly relevant to daily life and at the same time show little tangible reward. Someone who has been taught child spacing techniques can immediately begin to apply them towards improving his or her standard of living. This provides immediate reinforcement. The same person, however, would not be able to use visual literacy in such a direct manner. Thus it is more difficult to motivate new learners to acquire primary skills than is the case with situation-specific behaviors. Yet abilities such as literacy are really a necessity in order to teach practical techniques such as family planning.

It is, of course, possible to include in the early stages of any media-linked program an explanation of the desirability and necessity of basic educational capacities. This can be done in a fairly concrete manner, demonstrating the benefits which will accrue to the learner through such study. Nonetheless, the delayed nature of these rewards may make them unreal to many people. A possible

solution is the substitution of other types of reinforcement for successful completion of learning skill programs. One alternative is the presentation of gifts. For example, if radio has been or will be used in the project, a transistor radio can be given to each participant early in the sessions. This would simultaneously reward his efforts, provide increased personal status, and be a vehicle for further media use. Another substitute reinforcement is approval. A respected field worker could attempt to single out those members of a village who were participating in a basic educational program. It is possible that his approbation would be sufficient reward in itself. A different possibility is reinforcing participation in developmental programs with entry into other, more desirable classes. It could be made clear, for instance, that in order to attend sessions on nutritional practices (assuming they are recognized within the community as a desirable outcome), one must complete a series of literacy sessions. A social club could even be organized for the direct purpose of offering entertainment, but with the indirect requirement of completing a learning skills program offered under its auspices.

Another motivational mechanism is multiple purpose programming. In the process of teaching literacy, for instance, a project can also show the farmer how to handle agribusiness or the city dweller how to qualify for higher paying jobs. The literature and poetry of a nation, already appealing to the target population, can be exploited to seduce students into learning to read. Whatever the means chosen, noncognitive aspects of education such as motivation must be included in mass communications strategies. Information transmission alone is insufficient.

The development of basic learning capacity cannot be analyzed in a vacuum. Efforts to treat the individual as an isolated event in the universe do not take into account a number of key educational processes which derive from interpersonal and intergroup contact. Thus it is important to focus on the social conditions of learning. Primary among these is the fact that education should ideally begin as early in life as possible. This does not imply that any population which includes postadolescent members is pedagogically inaccessible. But it does recongize that people who are not given the basic tools of learning early in life are afflicted with a cumulative deficit which builds larger and larger roadblocks for them and requires more and more remediation before effective learning can begin. To take one specific example, an adult who has spent 30 relatively successful years without acquiring visual literacy may see no need to do so now. He faces a motivational roadblock in acquiring this skill. Furthermore, reinforcement of his existing behaviors over time has probably produced a mind-set. He suffers a perceptual roadblock, one which will make it far more difficult for him to interpret symbols visually than for a young child. Finally, lack of visual literacy will have produced significant gaps in his mental structure. These gaps, in turn, may make it difficult for him to assimilate new information, providing a cognitive roadblock. This implies that any communications strategy aimed at adult populations should pay particular attention to the initial development of basic learning capacity, and should include extensive remediation providing where necessary.

The social context of learning has other implications for any age group. One-way education is not sufficient. The fallacy that teachers teach, students learn, and the two roles are eternally fixed is not only unrealistic; it invites failure. It is not enough to feed information to youngsters or adults. The learner must directly participate in the process. Such activity does not have to be constant, but it must be an integral part of education. This has one obvious and immediate implication for communications techniques. Any attempt to rely solely on mass delivery broadcast media (such as radio or television) without providing involvement mechanisms for the learner (such as correspondence, interaction with a field worker, or meetings with a peer group) will ultimately produce a high dropout rate.

In addition to participating actively, the learner must expect success. Furthermore, he must find a similar expectation in those around him, and he must feel rewarded when he does succeed. Without hope of such reinforcement, the result will again be high attrition. With it, students can quickly learn that trial and error is an effective strategy, and they can develop the capacity to weather the difficulties of education as well as to enjoy the entertaining and easy experiences.

A related condition is that the learner needs to be convinced of the worth of what he learns, both in the sense of how much it is respected by others and in the sense of how relevant it appears to his own life. Again, this has a specific message for mass communications: the motivational needs already discussed. The learner needs the

encouragement and approval of his community in order to function well. Communications media can help educate an entire population and thus elicit approval for individuals participating in a specific educational program.

A learner needs a model: a person or group to imitate, with which to identify, and from which to learn. He needs exposure to someone he can respect and understand. Such exposure may be provided by the media (either directly, or indirectly through entertainment programs), by professional field workers, or by near-peers formally or informally serving as teachers.

The final interface between education and social relations is of particular importance to basic capacity development. This is the fact that most new learners do not learn well alone. Not only do they need the reinforcement which a group can provide, they need its structure to motivate them and compensate for their initial inadequacies in intellectual skills and volitional competence. Discussions, practice sessions, and work corrections are possible tactics for meeting this challenge. Another support function of groups has been described by Paulo Freire in his work on consciousness-raising. A key need of new learners seems to be developing a sense of self-confidence, efficacy, and uniqueness. Merely transmitting information does not satisfy this objective. It requires instead interpersonal support in the process of using new knowledge to change one's own life. For example, a rural education project in Ecuador includes a lesson on unit prices. The relevant presentation of such material and the support of a group environment have enabled some campesinos to deal with unit prices in the marketplace to avoid being cheated. A dry,

formal arithmetic lesson could never have achieved the same end. The information would not have been applied to personal behavior.

Group support can be achieved under the supervision of an aide, or it can be realized in a more abstract manner using the model of the British Open University, where members of a class (group) often do not meet each other face to face but are given an interactive sense of identity through the programming itself. Although structure is most easily provided in a real group setting, broadcast media can also serve, since the timing is set at a central point, sessions occurs regularly, and the learning session is paced. An important implication for the TDN is that most media strategies should include interpersonal activity as well as carefully designed programming which will enhance a sense of group membership.

In summary, the development of basic educational capacity is an important prerequisite for teaching general or specific skills and behavior. It is particularly important in areas of a country where formal schooling is minimal and a large percentage of the target population has not yet acquired necessary learning skills. It involves a large cluster of related behaviors, most of which are best taught in the kind of social setting which provides a new learner with reinforcement and structure. Basic education is most profitably taught directly to preschool and other young children, but can also be used with adolescents and adults in the context of other, desirable skills.

General and specific skills. The second basic type of education relevant to improving the quality of life through mass communication is the teaching of general (or functional) behaviors and skills. These are built upon the framework created in the acquisition of basic learning capacity. They pave the way in turn for the learning of situation-specific skills. For example, this category could include information about the general relationship between disease and health and the concept of vectors. In the area of family planning, it could introduce the definition and advantages of child spacing and briefly overview various methods.

The final category is situation-specific skills. Learning the proper control of one particular disease or the use of a specific contraceptive device are examples of this area. Such specific skills rest on the foundation laid in the former two categories. It has already been noted that in some cases situation-specific skills can be taught through the cookbook method. That is, it is possible to explain to an urban slum dweller the necessary steps for controlling insects without that person having any real degree of agricultural literacy (i.e., understanding of the use of pesticides) or general knowledge (i.e., the basic nature of disease). The advantage of such a technique is that it allows immediate results without waiting for more long-range programs to bear fruit. It will probably be used as an initial part of any mass communications project. On the other hand, there is serious question as to the overall value of these recipes. Without true understanding and real motivation, there is too much of an opportunity to forget a crucial step or simply to drop the whole thing as irrelevant. A compromise between presentations

which move from a general to a specific level (avoiding rote learning) and those which progress from a specific to a general level (avoiding dropouts) is a program which operates on all three levels simultaneously (providing immediate rewards while developing long-range intellectual foundations). We recommend the use of such multiple-purpose programming whenever possible.

Myths of education. In order to use mass communication techniques to efficiently attack specific educational goals through these three types of learning (basic intellectual, general, and situation-specific skills), many myths all too prevalent not only in developing nations but also in the United States must be avoided. One of these is the fallacy that education involves only the transmission of knowledge. Returning to the definition of education with which we introduced this paper, "that process which releases human potential," we can derive at least seven different learning domains: cognitive, affective, perceptual, sensory-motor, moral, volitional, and aesthetic-religious. None of these can safely be ignored. Of particular importance to new learners, however, are the perceptual, affective, and volitional domains. Perceptual competence is necessary to acquire the literacies which have already been discussed. Proper affective education is needed if students are to value education, if their attitudes are to be modified to include the desire to learn. "Volitional competence" is required to ensure that learners will carry out their initial resolve to master a particular subject area. Concentrating solely on the cognitive domain will produce inadequate education.

Another myth which must be eradicated is that only human teachers teach and that students can only learn. Effective teaching is a complicated process even now but dimly understood by professionals. We do know, however, that transmitting knowledge is only a minor part of the teaching process. Far more important is the ability to stimulate students, to ask questions, to evaluate, to reinforce, to assist the learner in integrating new material with existing cognitive structures, to guide him towards additional resources. A human being can clearly be a good medium for carrying out these tasks. But this is not the only possibility. Many of them can be effectively accomplished through technology. Thus communications media are not simply supplements to the human teacher; a medium can be a teacher in its own right. Projects which do not take this into account, which focus solely on passive learning and deemphasize participatory education, fail to realize the full potential of mass communications and therefore reduce cost-effectiveness. A learner is far more than a sponge passively soaking up facts. He is a human being capable of giving as well as receiving. Indeed, the process of sharing has already been shown to be an important part of ideal learning. Projects which see communication only as a one-way street may well fail. This implies that an effective program must employ more than just the broadcast, mass delivery technologies. It is a powerful rationale for the significant use of small, individualized technologies plus field workers. Human teachers, mass media, and students should be partners in educational process.

Another myth is that education can only occur at certain times and in certain places. In its most extreme form, it would limit learning to the classroom. Obviously this is not the case. What is not so obvious is that education can be entirely integrated into daily life. Multiple-purpose programming is an effective way of achieving this. One presentation can motivate, exercise basic abilities, teach situation-specific skills, and solicit learner feedback.

Two related fallacies are that education is always work and that education is always exciting. Neither one is true. True learning should be a stimulating process, and communications projects should take pains to incorporate this into their programming. The presentations themselves should motivate. Yet education does require hard work. It is impossible to create programs which are so entertaining that volitional effort on the part of the learner is unnecessary. This is why motivational factors and volitional competence must both be addressed in any integrated communications/ education system.

Finally, there is the myth of instant education. This is particularly prevalent when the media are being discussed. Many people apparently assume that a villager can turn on a television set or a radio and obtain immediate enlightenment. The obvious implication is that an educational project, including one to improve the quality of life, should incorporate a series of specific programs designed to communicate specific skills. A less obvious implication is that programmers must take pains not to create in

their audience any expectation that what they are learning will have immediate, concrete rewards time and again. These expectations cannot be fulfilled, and will therefore result in high dropout rates. It is far better to provide some degree of immediate reinforcement and continued reference to long-range benefits.

USING MASS COMMUNICATIONS MEDIA FOR EDUCATIONAL TASKS

Key media roles. Whatever the educational level -- basic, general, or situation-specific, whatever the educational goal -- intellectual skills, population control, nutrition, or maternal/child health -- the use of mass communications media can permit a vastly increased audience to receive general and individualized programming at relatively low cost. Many specific ways to accomplish this objective have already been suggested, It is our intention in this section to list the most important of these roles, roles which expand technological potential far beyond simple information transmission.

One primary function of communication is to capture attention. Via announcement of services, entertainment, or content-specific programming, potential learners can be attracted to a given educational area. If attention getting is combined with motivation reinforcement, media can be used to open the door to the minds of a target population.

Another key role for mass communications is helping to build a behavior setting for learning. Media can be an important focal point of education. A radio show or a slide-tape presentation gives an audience a tangible symbol of an abstract process. Of course the same thing can be achieved by setting aside a special time and location, but the vividness of media and its high status in many nations are powerful reinforcers which do not also promulgate the myth that education takes place only in a classroom. Media provides a strong signal for learning, an alternative to the blackboard or the workbook. Finally, as has already been noted, a medium can be a motivator.

Communications technology can disseminate a central core of programmed material allowing minimally trained field workers to operate effectively. This involves a cooperative role for human and mechanical teachers. In cases where experienced teachers are not readily available, media can assume the primary burdens of motivation, information transmission, etc., while nonprofessionals provide structure, reinforcement, and feedback. This approach is particularly effective when the core curriculum (delivered either en masse or individually) is combined with in-service training for the field worker. The media thus serves as a teacher of other teachers, making it a type of multiplier itself. A radio training session can be given just prior to a classroom broadcast. Correspondence courses can be used to link the nonprofessional with a central office. Field workers can be invited to refresher sessions at a

regional center. The possibilities are numerous. The central core approach, an example of modularization, is also effective in making generalized content relevant to a particular region or target population. The local materials allow for cultural fit and active learning. The need for these components is unquestionably relevant to the success of any program. For instance, if villages react against health materials which misrepresent the realities they understand (for instance, programs which use a locally unknown disease for illustration), the result is attrition.

Communications technology used in this manner can completely substitute for human teachers. If adequate personnel is unavailable, it is possible to develop programs which do not rely on field workers at all. On the other hand, when there is an abundance of manpower the media can be used simply to supplement interpersonal teaching strategies. The ideal solution probably lies somewhere between these two extremes. It would involve a complementary role between communications technology and trained personnel. In particular situations the emphasis may be on one or the other depending on needs and resources, but any combination of the two will probably produce optimal education.

The role of media in training community nonprofessionals (through transmitting information and providing models) includes explanation of teaching methods for basic education or other subject matter, training in how to enhance mass or individualized delivery (for instance, how to organize audiences and how to help them do tasks assigned during an actual broadcast), training in developing

situation-specific supplementary material (how to use rubber stamps or flip charts), and instruction in the smaller technologies themselves (how to use slide projectors, cassette tape recorders, etc.). A reward system can be set up for creative uses of technology by individual nonprofessionals. The media themselves might publicize successes. Mass communications can help overcome the sense of professional isolation which often afflicts field workers, while at the same time helping solve instructional problems which they face. This training can be carried out either in conjunction with group sessions at a regional or national center or through decentralized training programs for the worker on the job.

One final task which can be accomplished through mass communication is placing learners in new frames of reference. As we have already noted, this can facilitate difficult goals such as affective change. For example, the media can play an important role in making local populations aware of their participation in a regional, national, and even world community. The exposure to new environments and the process of becoming part of them are important aspects of basic education, especially in the motivational area.

Choosing the delivery mode. In interfacing a particular educational area with a cluster of communications technologies, the type of learning objective will usually determine whether the reception mode is audio, visual, or audio-visual. The delivery mode -- mass delivery or individualized delivery (either in small groups or singly) -- is more independent of the specific goals. Each mode has its own advantages and disadvantages, a good reason for combining the two.

The mass delivery mode lends itself best to motivation and information transmission. Motivation can be achieved by the use of direct appeals such as advertisements for participation in nutrition training programs or classes on basic intellectual skills. Indirect appeals can also be employed. These would show examples of the importance of, for instance, proper health practices or family planning. In many cases the indirect appeal is a prerequisite for the direct appeal, since people are not likely to respond to invitations to learn unless they already have some desire to acquire a particular set of skills and knowledge.

In the information it transmits, mass delivery technology is limited to the lowest common denominator. That is, it cannot include facts or concepts which would not be easily grasped by the majority of the target population. To do so would result in confusion and frustration on the part of its audience, creating too many dropouts. As much specific information as possible should be included without creating such problems. A program which presents many facts about family planning but offends cultural sensibilities in doing so is probably worse than no program at all, since it will leave a residue of negative attitudes towards the entire field which subsequent efforts will have to overcome. As usual, information may be presented directly or indirectly. A direct presentation on nutrition might employ a program on how to prepare a certain type of food. An indirect presentation might be a television drama with a detailed example of food preparation, the heroine creating a meal for her family.

The advantages of mass delivery media are numerous. They can be extremely low cost if existing media are used, for one program can reach a maximum number of people. A second advantage is high production quality; many resources -- financial and human -- can be used in creating one program without increasing the per capita cost. A third potential of mass delivery technology is the status which radio and television often give both to a nation and to its citizens who are using it. Finally, there is the flexibility of such media. They can be used to transmit virtually any type of program, including those relying on smaller technologies such as filmstrips and tapes.

On the other hand, mass delivery media certainly also have several important disadvantages. Chief among these is their one-way nature. A radio program in itself cannot provide to its audience feedback, answered questions, evaluation, reinforcement, or external structure. A listener who grows confused, discouraged, or bored is all too likely to turn off the program for good. Another major disadvantage is the lowest common denominator effect. Because of this limitation, such programs cannot be directly individualized. If a target population includes both literate and illiterate people, the amount of television material oriented toward literate citizens must be drastically curtailed. This is highly inefficient, and may negate the type of cost-effectiveness which mass delivery can provide. Unless programs can be modularized to permit regional or situation-specific adaptation and addition, we would not recommend

the use of mass delivery media for heterogeneous populations. Moreover it is inadvisable to disseminate sensitive or emotionally charged information or ideas on a mass basis. In one respect this is a specific application of the lowest common denominator principle to the affective area. The population control question again provides the best example: in many nations family planning is simply too embarrassing (either personally or politically) to allow it to be openly and fully discussed in broadcast presentations. The final disadvantage of this mode is its technological complexity. Not only is the creation of broadcasts a significant task in itself, but the maintenance and distribution of receivers is no small feat. An ideal series of television programs does no good if there are too few operating sets with which to view it.

As its label implies, the main advantage of the individualized delivery mode is that media can be tailored to specific needs, backgrounds, goals, and sensitivities. This mode is, therefore, particularly appropriate for heterogeneous target populations. Either through the centrally produced and modularized strategy, through regional production, or through client-produced material, programs can be created which will fit in any cultural situation. Another advantage is that this category includes media which are technologically less complicated than radio or television. This is especially true of the print media. Very little can go wrong with a flip chart, and in case of problems it is inexpensive to replace.

Especially when many different media are combined, perhaps under the auspices of a mobile resource center or a village technology center, these options can be as stimulating and varied as mass delivered communications.

The major disadvantage of this approach is its higher per capita cost. Although, for example, slides are essentially cheaper to produce than television programs, if one must produce fifty slide shows to reach one population the cost is multiplied by a factor of fifty. When the lowest common denominator effect is not a major issue, it is probably best to use mass delivery systems. But for ensuring cultural fit, there is no substitute for individualized programs. A second disadvantage of this mode as applied to learners working alone is the lack of reinforcement, structure, and feedback -- components which have already been shown to be of great importance. Such benefits can sometimes, however, be obtained without group activities. For instance, a newspaper written for barely literate villagers can be used in conjunction with a series of followup visits from field workers or near-peers. Here the strategy of having people and communications technology work as a team is particularly promising.

The individualized mode of delivery can also be used in a group setting. This has the obvious advantage of providing the very factors lacking in delivery, mass or individualized, to individuals alone. It can provide motivation, reinforcement, feedback, and structure. Group presentations also make the most effective use of field workers,

since such people are not forced to visit fifty homes to reach fifty clients. Of all communications possibilities, individualized delivery through small groups most easily provides two-way communication. Finally, this approach represents a compromise between the low cost of mass delivery and the higher cost of individualized delivery, since fewer programs must be written and fewer personnel need be employed.

One disadvantage of individualized delivery within a group setting is that an acceptable meeting location must be found and a workable group structure must be created. This is often achieved by using existing settings: community centers, social clubs, the marketplace, the family, etc. It can also be achieved by providing education on the job, a strategy successfully employed in many developing nations. On the other hand, it is entirely possible to concoct new groups for the sole purpose, or at least the main purpose, of education. For example, parent/child centers can be formed by trained field workers to serve as a forum for educational broadcasts and presentations. The same centers can be of additional use to the community in the areas of social intercourse and recreation, or even through such functions as day care. Another disadvantage of the group presentation is that some topics may be sensitive enough to be threatening to learners, who would therefore not be as inclined to work in a group as they would to participate in the privacy of their own homes.

IMPLICATIONS FOR SPECIFIC EDUCATIONAL GOALS

In this chapter we have suggested that whatever specific definition of improved quality of life is used, it is possible to employ a wide variety of communications technologies and a set of basic educational principles in developing support programs. We do not, therefore, feel that it is necessary to explore in detail each of the four specific areas suggested by AID: basic intellectual skills, family planning, nutrition, and maternal/child health. Programs for these fields can and should be built on the general framework which we have already suggested. Their specific content will depend on the needs of a given country and its target populations; an adequate base of existing research relevant to possible program content already exists. This section, therefore, consists only of a brief overview of each of the four areas.

The field of basic intellectual skill training is essentially congruent with the development of basic educational capacity which we have already discussed in detail. The content of this area relates to the development of fundamental perceptual and cognitive skills, as well as the motivational readiness to develop and use them. Basic education is needed when large urban and rural groups are not reached by schools at all, where children begin school culturally unprepared for the experience, when newcomers to a city are unprepared to cope with their new community or lack the basic skills necessary to take advantage of urban employment opportunities, or when villagers need to develop hitherto neglected basic capabilities in order to respond to changes in rural life.

It has already been noted that this field is really a prerequisite to more specific content areas. The questions facing decision makers have not to do so much with whether to educate for basic intellectual skills but rather with how many people to educate, to what extent, and where in the nation. Two strategies are available. The social strategy is to educate to a level where basic skills can be useful while avoiding inflated expectations which will explode in frustration and anger. The educational strategy is to increase the range of the individual's experience to a point where learning input is meaningful, but to stop before it becomes confusing. The optimal strategy derived from these two is one of adequacy: to educate just enough to let people and their communities function in a gradually improving society. Within the range of desirable skills, a flexible base line of achievement should be established which will be raised or extended over time as the economic, technological, and educational situations in the society permit.

An effective communications campaign to train basic intellectual skills will probably include the following components:

- A substantial use of existing mass delivery media combined with indirect programming to draw attention to the need for basic education and to motivate students to participate. One example of this would be the Familia Gomez type of radio or television drama, with plots continually stressing the need for functional literacy in order to achieve an adequate life style and extolling the benefits of such attainment. An alternative to the dramatic approach is short commercials interspersed between broadcast and entertainment selections.

- A secondary use of direct programming over the mass delivery modes to achieve the same end. This would simply be a less subtle attempt to explain to the population the

need for and advantages of basic education.

- At least one or two core programs with direct impact, again over the mass delivery media, designed to provide a basic introduction to necessary intellectual abilities.

- Simultaneous training in at least a few practical skill areas in order to provide short-term as well as long-term rewards.

- The organization of community-based small groups for the direct or indirect purpose of acquiring basic intellectual skills. The groups would need to employ the services of either a trained near-peer or a professional field worker.

- The use of small, individualized delivery technologies to transmit situation-relevant programs to specific populations and subpopulations. These programs would focus both on motivation and on information transmission. They could be linked to community organizations, homes, or resource centers.

The other three areas are all specific content fields, being classed under the rubrics of general and situation-specific skills and behavior. Family planning (population control, population planning) refers to assisting people to regulate their fertility to their own advantage. It includes both the increase and the decrease of fertility. Personal advantage must be the primary argument, although obviously the particular emphasis given will also depend on national need. Thus in India the advantages of smaller families will be stressed, whereas in rural Zaire it may be appropriate to suggest ways of increasing family size through controlling venereal disease-induced sterility.

Communications media can play several direct roles in overall family planning programs. They can help build a climate of acceptance by increasing public knowledge and reinforcing attitude changes generated from personal communication and mass programming. The target population can be made aware of population control as a way of improving the quality of family life and can be prepared for interpersonal influence from near-peers. The media might serve

a legitimization function by provoking public discussion by indicating the support of respected gatekeepers, and by making people aware that others like themselves discuss and practice family planning. Such legitimization makes it possible for husbands and wives to discuss child spacing in cases where shyness or ignorance normally prevent such interaction. The media can disseminate information, announcing the availability of services and referring people to sources of further details. Where cultural and political sensitivity permit, mass communications (especially individualized delivery media) can also play a part in transmitting specifics on contraceptive techniques. Technology can validate other information channels. A good "advertising campaign" for population control can support the motivational functions of informal communications channels. Finally, mass communications can be used in training field workers as family planning consultants; again, the individualized delivery mode is probably the most appropriate given the sensitivity of this issue.

The media might also play an indirect role in strategies for lowering fertility. For example, successful population control depends on a context in which parents can improve the quality of their children's lives. Media can help demonstrate that opportunities do exist for one's offspring and that these opportunities are greater when the general population, as well as the specific family, is smaller. Alternative ways to attain the satisfaction gained from large families can be illustrated. These could include economic rewards

(by publicizing the existence of social security benefits and better paying jobs) and social rewards (by offering women alternatives to deriving status from child bearing, such as the satisfaction of being effective mothers, child rearers, homemakers, and learners).

The importance of communications technology in nationwide population control has already been demonstrated in practice. Research shows that the media can increase the number of adopters of the family planning approach. Its success in communicating more specific information on family planning is still a matter of question. More than any other area discussed here, this subject grates on a number of sensitivities in a number of different countries. The intimate aspects of family planning publicized over the media run the risk of offending or embarrassing potential learners. Effective child spacing techniques may be too complex to convey through mass communications channels alone. The controversial nature of family planning may remove the support of government and public opinion. The lowest common denominator effect limits the communicator's capibility to target messages to specific audiences, which is especially important in attitude change. Finally, the fact that communications techniques reach large numbers of people over a broad geographical area raises the danger of motivating people to whom family planning services are unavailable. Since effective population control requires its own technology, and since this technology is not always accessible in every village, there is the possibility of raising expectations which could later be shattered by unavailable or poorly trained help that may alienate the populace.

The specific dimensions of a communications-oriented family planning program would therefore vary greatly from country to country. Nonetheless, the average project would probably include the following components:

- A campaign over mass delivery media, through both direct and indirect programming, designed to acquaint people with the benefits of population control and motivate them to seek these benefits.
- A simultaneous campaign over the same media to give target populations information on where to obtain family planning assistance.
- A coordinated campaign of community-based or region-based family planning clinics staffed by trained professionals, supported by nonprofessionals, and using individualized delivery media for cognitive and affective communications.

The importance of nutritional education is readily seen when we examine the appalling fact that 30 million children are handicapped each year because of correctable nutritional deficiency. Here the objectives are again motivation and information transmission. Target populations must have attitudes changed so that they will want to improve nutritional habits, and they must be given the information with which to make such improvements. Although the issue is usually less sensitive than family planning (although it can attack some cultural assumptions and beliefs), its specific content will again vary significantly from country to country according to the nutritional needs and environment of each nation.

A mass communications approach to teaching nutrition would draw on the wealth of existing information and data in ways similar to those already discussed. That is, it would include:

- A motivational campaign over the mass delivery media through direct and indirect programming.
- The use of the same media to provide specific information on nutrition.
- Transmission of regionally specific information through individualized delivery modes to individuals or groups.

Finally, the area of maternal/child health can be approached in the same manner. It would probably fall somewhere in the spectrum between family planning programs and nutrition, in that it does not involve the sensitivity of population control but nonetheless requires clinics and technological support in order to be successful. This implies less use of mass delivery media than for the nutrition area, and more use of community-specific, individualized delivery presentations in conjunction with learning/service centers.

SUMMARY

Four content areas relevant to the quality of life -- basic intellectual skills, family planning, nutrition, and maternal/child health -- involve common communications and pedagogic implications. This chapter has examined them simultaneously for the purpose of ascertaining the potential relevance of different mass media modes. Each field involves three levels of learning: basic educational capacity (including various literacies), general skills, and situation-specific skills. No matter on which content area and level a communications program focuses, it is essential to consider more than just information transmission. Affective factors such as motivation

are prerequisites for the successful use of the media. One important strategy for meeting noncognitive needs is the use of communications media in conjunction with small groups. We have concluded by examining potential roles for communications technology in dealing with these four content areas. In every case, we have recommended using a combination of mass and individualized delivery media, direct and indirect programming, individual and group reception.

CHAPTER IV

A CONTEXT FOR DECISION-MAKING

The preceding two chapters have explored the range of possible mass communication technologies, the educational implications of improving the quality of life, and the relations between the two. Taken in conjunction with other available in-depth material, these pages can assist AID and TDN decision-makers in planning a myriad of communications programs to augment the quality of life in technologically developing countries. There is still, therefore, the question of choosing from among these possibilities.

The goal of this chapter is to suggest a number of principles which should assist planners in this task. We will attempt to avoid most conventional advice (such as taking into account manpower needs and resources in designing programs) which can be readily obtained from other sources. As a substitute we offer a series of ideas which are not frequently discussed in the literature of innovation and change. These are not meant to be dogmatic rules, but rather to stimulate fruitful thinking about alternative ways of planning communications/education programs. Neither do we believe that many of these strategies will be unfamiliar to AID. We do feel, however, that they are too often ignored or played down, and that their use in the decision-making process will help to ensure effective resource allocation.

Principle One: "People are more important than planning."

It would be unwise, even unethical, to jump headlong into a project which involves millions of dollars and thousands of human lives without some sort of specified objectives and plans for reaching those objectives. The reality is, however, that the many project plans are not very useful in achieving such goals. They seem to be designed more to offer comfort to bureaucrats, administrators, and project personnel than to provide effective guidance and mechanisms for reaching stated objectives. Most in-depth plans respond as much to political needs as to task needs. They say what someone wants to hear, but frequently ignore or distort what really needs to be done. They include so many specific bits of information that an inflexible, monolithic structure is created, which is incapable of responding effectively to changing situations and developing goals. In brief, complicated plans are far too often irrelevant, in whole or in major part, to the task at hand.

Any experienced administrator can affirm from personal experience that a good plan will come to naught if it is implemented by unqualified or incompetent people. A Ford Foundation evaluation recently found personnel problems to be a primary cause of project failure. Most administrators can also testify that a highly competent staff will often manage to compensate for bad planning. This implies that, given a choice, far more effort should be spent in locating and recruiting outstanding human resources for a mass

communications-based education project than in specifying a priori every operational nut and bolt.

No one is forced, of course, to choose between these two options. The ideal is a good plan supported by good people. In our opinion, a good plan for using mass communications to improve the quality of life in developing nations would include several key components. First, careful attention would be paid to the question of project personnel. Who is available? Can scarce human resources be trained or imported? Can evils such as featherbedding and nepotism be effectively avoided? Can a project be structured in such a way as to offer advanced training to existing professionals? Can creative administrators be recruited to coordinate the efforts of communications and education specialists? Upon the answers to such questions will depend in no small measure the ultimate success of the project.

A second component of an acceptable plan is that target populations are seen as people, not as quantified data to be manipulated at will. Although it is axiomatic to point out that human beings are complex entities, the difficulties of dealing with this fact administratively are significant enough that it is frequently ignored. Yet a project which does not view, for instance, a population of mothers as more than just potential recipients of information on mothercraft but also as human beings with family and community responsibilities, personal needs, and limitations, may produce programs that are irrelevant, boring, or offensive.

A third factor in good planning is that attention must be paid to the infrastructures within which the plans will be executed. For instance, there is often a real question as to which ministry should control a communications/education project. A choice between the Ministry of Communications and the Ministry of Education may produce severe political consequences. Two alternatives present themselves. The first is to choose the best existing infrastructure within the TDN and then justify the choice in any way that is politically feasible. If this is impossible, it may be more practical to create a private or semiprivate corporation for the specific purpose of running projects rather than locating within an opposing agency or stimulating political jealousies. Cultural and political realities can limit what is possible, but unless an adequate infrastructure is created or found at the beginning of a project, the best plans and the best people will be unsuccessful.

The final key to successful planning is flexibility. It is obviously useful if an administrator can open a project description and find out in detail what will be happening three years, two months, and twenty-nine days from a certain date. Such comfort does not remove the fact that any detailed three-year prediction may well be useless. If the project is successful, it will be a dynamic, developing entity which will move far beyond the confines of initial thinking. If the project is able to stay exactly on course as originally defined, it is probably already a failure by virtue of being bound by preconceived notions. A flexible plan

would contain immediate objectives and details plus more general guidelines for future stages.

Principle Two: "Act, then think and plan." This is really a corollary of Principle One. Far too much effort and too many resources are spent creating a complex plan which is irrelevant to the real goals and progress of a project. Such an expenditure leaves a correspondingly small amount of resources to apply to execution of the project. A much better strategy is to make a start, and to learn by trial and error (plus trial and success). A relatively small amount of effort should be necessary to create the type of flexible plan just described. This leaves more resources for implementation.

Furthermore, a better ratio of action to planning makes it easier to revise projects in midstream. Few administrators will be willing to change the course of a project where vast energy has gone into planning. The thought of a correspondingly large effort to provide minor changes is overwhelming. The tendency is to let the project continue as originally specified, even when this is not the ideal option. With less complex, more flexible plans, it is far easier to make ongoing changes. There is more energy and less inertia.

Principle Three: "Pilot projects can be dangerous." One of the most conventional ways to initiate an important program is by creating one or two pilot projects. Instead of starting with a wide variety of media and programming focusing on all four quality of life areas--basic intellectual skills, population control,

nutrition, and maternal/child health--many planners might choose to support one radio-linked program to teach basic intellectual skills and perhaps one small technology, community-based program to deal with nutrition. The advantage of the pilot approach is the opportunity to obtain fairly low cost feedback based on real experience. If radio proves to be inefficient in a TDN, a change can be quickly made to an alternative communications technology. In one sense, then, pilot projects are a way to operationalize the principle of reducing early planning to manageable levels.

Nonetheless, there are major disadvantages to the pilot project approach, disadvantages which are significant enough to suggest its impracticality in most cases. These are particularly relevant in the area of mass communications, where even experimental programs are expensive (often costing $500,000). The first problem is that pilot projects, by definition, are small scale. This means that they frequently do not unearth problems which later appear in a full-size project. For example, a successful radio program to teach basic intellectual skills might be created by distributing transistor receivers throughout six communities. When the time comes to expand this approach to one thousand communities, however, it may turn out that the distribution costs are too high, that distribution problems are insoluble, that there are too few maintenance personnel to keep the radios operating, or that the special status associated with being given a radio is diminished significantly enough to reduce motivation to participate in the program. In the same way that there can be economies of scale there

can also be difficulties of scale, and pilot projects have no way to examine these.

Another problem is the Hawthorne effect. The social sciences have been rocked by the discovery that experimenter expectations can skew the results of an otherwise carefully controlled experiment. The Hawthorne effect applies to pilot projects, too. By paying attention to a specific use of communications media for a specific educational goal, and by communicating (overtly or covertly) the expectation and hope that this will be successful, target populations may temporarily receive strong motivation and reinforcement. Once the project is expanded, on the other hand, and such special emphasis no longer exists, these inducements will fade. With them any success achieved in the small-scale effort may well disappear.

Pilot projects often are given too many resources, so that they are really not comparable to the large-scale projects which often succeed them. In an effort to "give the program every chance to succeed" more dollars and personnel may be poured into it than can possibly be provided for a large-scale, nationwide effort. Again, this means that any success achieved would not necessarily be replicable at full scale.

Still another serious disadvantage of pilot projects is the problem of continuity. Unless particular care is taken to ensure that people do not focus on the initial program as an end in itself, but rather see it as a first step, it will become institutionalized. It will win friends, make enemies, and generally divert attention from other, more substantial efforts which might follow it. The

history of innovational education funding in the United States is repleat with examples of well conceived pilot projects which die soon after they have been completed without spawning any significant permanent changes.

Finally, there is the real problem that pilot projects can create jealousies which stand in the way of future efforts. If an endeavor may be threatening to individuals or groups within a governmental structure, for example, it is unwise to begin with a small program. It will develop an inertia of its own and victories in gaining support for it may be impossible to repeat when the time comes for expansion. If political and cultural support is necessary for the successful completion of a communications/education endeavor, it is better to obtain that support from the start for a large project rather than using it for something which will have no lasting benefits for the nation as a whole.

Principle Four: "Use of Competing Projects". Although education and communications have always played a part in human cultures, their existence as scientific professions is relatively new. This means that there has never been a chance adequately to explore alternatives within these two fields. For example, in United States education we have depended on one teaching role. Since the Nineteenth Century teachers have been considered semiskilled professionals buttressed by a cadre of support personnel and supervisory administrators. Our commitment to this view of the teacher and its institutionalization in our public and private school systems means that we have no experience at all with alternative task definitions. This, in turn,

means there is no way to predict effectively the success of a suggested alternative, for example the substitution of communications media for teachers.

Given this monolithic structure, a logical way to proceed is by designing competing projects, each supported by a powerful on-paper rationale, all of which would be tested and practiced. Only through operational examination can the best communications and educational strategies be chosen. Of course, such an approach means that we must be willing to accept failure and learn from it, and given the high cost of technology-based projects, those failures must be minimized. But in reality the status quo has a high percentage of failures, too, and it is unlikely that experimenting with alternative programs will produce any lower rate of success than could be insured by remaining within the comfortable confines of existing concepts. Furthermore, it is a rare project that fails 100 percent (or, for that matter, succeeds 100 percent). Most projects have strengths and weaknesses. The strengths can be isolated and incorporated into succeeding ventures; the weaknesses can be eliminated from new plans.

The competing projects strategy is an effective alternative to the pilot project approach. A planner does not have to choose between a small scale, artificial, monolithic experiment and a large scale, expensive, dangerous attempt to do everything at once. Instead, he can isolate a number of objectives and several techniques, then design programs employing different communications and pedagogic techniques to meet his goals. Evaluation of these attempts would provide real data on which to base future decisions. Thus a project might begin

with half a dozen relatively independent mass communications programs designed to meet one or two specific educational needs. After three years, these could be evaluated and new programs could be designed based on the experience gained with the first half dozen experiments. Finally, when the two or three strategies thus derived proved their worth in practice they could be expanded in scale to relate to all learning objectives and all mass media upon which the country wished to focus. In the communications field, competing programs can be designed within various media (for example, one program based on central radio or television programming and the other using regional and modularized programming) or across the media (one program based on the use of radio and another attacking the same educational objective using a mobile resource center and community nonprofessionals).

Principle Five: "Low-risk projects have a high rate of failure." It is comfortable, and therefore desirable in the eyes of many planners, to plan projects which seem to have a low risk of failure. Unfortunately, this involves doing things with which other people have been successful. This means that the full educational potential of mass communications technology will never be realized, since we have only begun to scratch its surface in the last few years. The past offers only limited wisdom. It can be inadvisable, therefore, to concentrate solely on familiar approaches. Here is one place where a bit of folk wisdom, "nothing ventured, nothing gained," is too often overlooked. We feel that any worthwhile communications/education project must incorporate significant experimental concepts. Especially within the context of competing models, the risks inherent in such a strategy are acceptable while the potential for success is far greater.

Principle Six: "Attack exciting objectives, but don't attempt everything at once." This idea is certainly familiar to administrators and planners. It appears at first glance to be somewhat in conflict with the preceding strategy. In reality, however, there is a continuum running from low risk, low expectation goals to high risk, high expectation goals. The ideal project falls somewhere in the middle. Principle Five suggests that objectives should include some element of risk in order to realize the educational potential of communications technology. Principle Six indicates that the risks should be reasonable, and even more importantly that projects should not promise what they cannot deliver. We have already mentioned one example of the negative effects of unkept promises. In the area of population control, broadcast media which offer a target population improvement in the quality of life, but do not also provide coordinated, community-based programs through which they may learn and practice child spacing, create only frustration. In the same way, the government of a technologically developing nation should not be promised that mass communications offer the answer to all basic educational problems. Just as alternative media delivery strategies must be considered, so a mass communications instructional program should in itself be part of a larger, more general educational program within the country. Nothing can completely compensate for the lack of efficient primary and secondary schooling in training competent manpower for future needs. There have been unfortunate instances in the past in which governments have financed an expensive television network only to find that it was difficult to employ it to the fullest extent and that it could not achieve its promised objectives.

Principle Seven: "Maintain flexible budgets." This strategy is based upon two assumptions. The first has already been stated as still another principle: people are more important than planning. The second is that most budgets make program personnel work harder than necessary to accomplish legitimate purposes. A budget in which every penny is carefully allocated to a line item, with little possibility of shifting funds or obtaining new resources for unforeseen developments, is very similar to a plan in which every step is specified so far ahead that the details quickly become irrelevant. Again, the reality is that it is difficult, if not impossible, to foresee at the beginning of a project exactly what will be needed, how, and when. No one would argue that careful budgeting is not necessary. But budgets must be structured so that they assist, and do not hinder, administrators.

On this basis, we propose a new budget category as an essential part of any communications/education program. This mechanism would place five percent of all project funds in a discretionary fund instead of a line item. The project director would have sole control over these funds. He would not be accountable for their use, except in the most general way. Given the proper personnel, this would allow budgets as well as plans to be flexible. If two years into a program based on mobile resource centers it became clear that video cartridge machines were absolutely necessary to success, such funds could be used to purchase them. Without this type of discretionary account, the need would go unfulfilled, since no one foresaw it when the budget was originally formulated. This particular strategy is especially important in a field such as media education, where new frontiers are constantly

being broken and where it is very difficult to predict future events on the basis of limited past experience. We believe that the use of the five percent discretionary category would increase cost-effectiveness, since it permits funds to be used exactly as necessary and does not force administrators into neglecting unforeseen needs while spending money on outdated concepts. The funds could be encumbered either by creating the category at the beginning of the project or simply by authorizing the project director to appropriate to his uses any given line item as long as the total money thus obtained did not exceed five percent of the project grant.

Principle Eight: "Existing evaluation strategies are crude and often irrelevant to project goals." The field of evaluation has grown out of the natural sciences. We have significant skill in measuring natural phenomena. We are far less skilled at measuring human behavior. The fact that rows of people in a classroom are very different from rows of molecules is often overlooked by evaluators, whose instruments are designed to measure relatively static and simple events. This means that many evaluation components of projects offer comfort rather than providing effective formative and summitive feedback to project personnel.

Evaluation is, of course, important. But it is far more important to be honest about what we can and cannot do than to structure instruments and techniques which at best tell nothing of real importance and at worst hide what is actually happening. Many relevant research techniques are now being developed. For example, the University of Massachusetts has for some years been experimenting with a mechanism for transforming "fuzzy concepts" (the type of unspecific, unmeasurable goals with which most

projects start) into operational, behavioral, measurable terms that can be reviewed through existing techniques. (Dr. Thomas Hutchinson at the School of Education, University of Massachusetts, can provide further information on this model, known as "The Operationalization of Fuzzy Concepts.") This fills a major gap in the field. It ensures that the project director will have data on relevant aspects of the project, rather than the things that some evaluator feels can be effectively measured.

While these techniques are still in their embryonic stage, however, it may be necessary to play down evaluation to some extent. In a communications/education project the objectives should be carefully examined, possible evaluation techniques should be suggested, and these techniques should be evaluated both for their cost and for their ability to produce real data about critical phenomena. If either the cost or the relevance of the techniques is unacceptable, it is time for some courageous honesty in stating that there is no way to ascertain quantitatively the success of a particular program. Although this can result in reliance on subjective measures such as the personal opinions of project personnel and randomly selected target population members, and on unobtrusive measures such as the rates at which students leave school or the number of people who go to a family planning center, it is far better than expending resources to obtain useless data and then having to live with the implications, real or fallacious, of that information.

Principle Nine: "Obtain an extended commitment." The first time a horse and a steam engine raced, the horse won. Had a final

decision been made at that time as to the future of steam power, we might still be driving our buggies to work each morning. Similarly, there are bound to be difficulties associated with any new project, whatever its inherent worth. Unless there is an initial decision that, no matter what problems are encountered at first, the project will continue for some reasonable length of time so that it will have a real chance of success, many innovations of the importance of the steam engine will be lost.

Another important reason for obtaining an extended commitment is the fact that education is not a linear process. Recent research has exploded the myth that a graph of learning accomplishment over time usually results in a gradually increasing straight line. The evidence shows that the norm is not nearly so simple. In some cases learning produces an exponential curve, with a slow start as pre-requisites are assimilated followed by accelerating success as this integration process bears fruit. In other instances education involves a combination of linear learning and plateaus, with a delay between final mastery of one set of skills or concepts and initial mastery of the next. Still another possibility results in graphs in which the learning curve occasionally has a negative slope. It rises for a while, falls, then rises again. Here initial improvement follows introductory material, then performance falls off while all new facts and concepts are digested, and finally performance begins to improve again after a slight delay. A media education program which showed diminishing returns might be suffering from a normal plateau or dip in the learning curve rather than failure. Hasty

termination of the project would result in a halt at the brink of success.

We suggest, therefore, that any overall communications/education program in a developing nation be guaranteed funding and support for a minimum of three years, no matter what initial effectiveness is measured. This should not, of course, prohibit project personnel from making changes in program particulars, whether that be a switch in technological emphasis or a different approach to a particular educational objective. The key is to provide assurance that the project as a whole will continue long enough to determine success or failure adequately. Without such a commitment, too many programs will be dropped at the first (perhaps misleading) signs of possible difficulties.

Principle Ten: "Special attention must be paid to opinion gatekeepers." The term gatekeeper refers to those roles within a community or a nation filled by people who influence public opinion. This can range from the government official and the communications programmer himself to local religious figures, civic leaders, and elders. In many instances media campaigns directed at a population as a whole will be unsuccessful because they are not acceptable to those gatekeepers who can effectively prevent the community from achieving potential benefits. In such cases, the shortest distance between two points (the programming source and the target population) may not be a straight line. The best way to reach individuals within a community could be through the gatekeepers. Especially in the area of attitudes, some programming attention should initially and

automatically be paid to this group of people. It could range from special programs aimed at, for instance, village religious leaders, to the more indirect strategy of employing gatekeepers as near-peer nonprofessionals, thereby helping them see the media as being able to enhance their prestige, not threaten it.

It should be remembered that the government is a special form of gatekeeper, and can indirectly reduce program effectiveness. A country which views television as a luxury, and therefore imposes high import taxes on television receivers, is essentially prohibiting the use of television in important educational projects. This is one area where the United States, through AID, might influence technologically developing nations in an important way, by helping their leaders to revise their perceptions of particular communications technologies.

Principle Eleven: "Develop critical mass." Finally, there is the principle of critical mass. Somehow this concept, derived from the physical sciences, seems also applicable to social science problems. In educational programs, once a critical mass of learners has been reached and there are enough people throughout the country participating in an educational program, it will begin to grow of its own accord as formal and informal communications channels spread the word of its importance. Up to that point, it will be perceived by most people as something new and potentially threatening, and will meet resistance. This principle sometimes means that a given project needs a longer than normal developmental period in order to show success. It is an extension of the idea of initial commitment. In

other cases, a project may be technically successful but never show any promise of generating the critical mass necessary to ensure its continued existence. In such instances, the principle dictates that a new strategy be developed for attacking the same educational objectives.

DECISION-MAKING STRATEGIES

The preceding eleven principles focus on the phenomenon of change and offer guidelines that can ensure effective, lasting innovation. We would now like to suggest five strategies which relate to the decision-making process, again attempting to attack the problem from a different perspective than that of conventional wisdom.

Principle A: "Unity in diversity." The need for cooperative decision-making has been well established in other documents. We would simply stress that this approach must not be considered only because it is politically expedient. It should be adopted because research shows that the more diverse a group of problem solvers are, the more creative they can be in producing high quality solutions. By making decisions on the basis of input from U.S. AID, the technologically developing nation under consideration, and representatives of the target population, the best possible programs can be discovered. The group will have more information and wider perspectives on the issues. The goal of cooperative decision-making should be to provide a basic framework of unity within which diversity of viewpoint and opinion can find full expression. The

further away from advocacy and defense a group can move, the smaller the chance of ending in stale compromise and the greater the chance of true synergy, where the whole will be more than the sum of its parts.

Principle B: "Rethink cultural imperialism." Cultural imperialism implies the imposition of values, goals, and methods from one setting to another. This is clearly an undesirable process. Unfortunately, the term too often connotes that a particular culture, whether it be the United States or the TDN, either has very little to offer others or is basically all right as is. Neither of these extremes can ever be correct. Within the framework of united diversity, there should be a frank understanding that both the experience and the expertise of the United States, as well as the values and background of a technologically developing nation have value. All these things should be considered.

Principle C: "Frank recognition of the need for moral judgments." Yehudi el Kana, a noted philosopher of science, has pointed out that there is a basic flaw in the scientific method. This process is an excellent tool for investigating any given problem. Unfortunately, it says nothing about which issues to investigate. It is in the choice of problems to attack that the need for moral and value judgments appears. Any decision-making process which does not take this into account suffers an important weakness. This is especially relevant to the quality of life, where the concept's definition depends in many respects on subjective considerations. For example, it can be statistically demonstrated that family planning

can be an important tool in improving the quality of life for Latin American countries. These cultures may, however, view population control as a dangerous or even immoral practice. Such a point of view should be carefully considered in developing communications/education programs and not dismissed as "unsophisticated."

Principle D: "Frank recognition of the political limits of funding". Not only moral and value judgments, but political reality, impinges upon what really is and is not possible in creating communications/education programs. This, too, must be openly recognized when developing such projects. It is certainly unwise to create a system which will be politically unacceptable to either the United States or a TDN, and it is far better to recognize such political limitations consciously from the start.

Principle E: "A new definition of cost-effectiveness". A quantitative definition of cost-effectiveness is insufficient. It does not take into consideration the many aspects of success and failure in communications and education which cannot, at least at this stage of the educational evaluation techniques, be measured through "hard" data. Neither does it pay attention to the possibility of unexpected outcomes, desirable or undesirable. Knowing that a series of radio broadcasts is the cheapest way to reach the largest number of people is a useful bit of information. It is not, however, sufficient for making a decision about final programming strategies. Perhaps these same radio programs would result in bad attitudes, boredom, or offense on the part of their audience. In such a case, the least expensive system in the world would be worse than useless.

In many instances cost-effectiveness cannot truly be determined until after the conclusion of a project. Only then can the full impact of a system be ascertained without preconceived limits. One can, of course, make an educated, a priori guess about the relationship between the impact of a program and its costs. It is usually possible to make a more accurate determination after the project is operational. Nonetheless, it is almost axiomatic that quantitative certainty of cost-effectiveness is impossible in any specific situation. The most we can hope for is an approximation which is close enough to permit decision-making based on program cost as one factor.

SUMMARY

When developing mass communications-based projects to improve the quality of life in technologically developing nations, it is insufficient to focus attention only on available methodologies and learning objectives. In making final decisions about which skills will be addressed, which target populations will be chosen, and which media will be used, it is necessary to understand the prerequisites of innovation and recognize several important factors in decision-making. The goal of this chapter has been to suggest strategies which can help the planner in integrating communications technology, education, and the specific resources and needs of a given TDN. We have emphasized the importance of flexibility in plans and budgets, attention to project personnel, alternative experiments, and caution in making quick judgments about success. We have also noted the creative value of cooperative decision-making and the hidden moral or political

constraints on planning. Our hope is that these ideas will further stimulate the effective use of technological potential in improving human life.

CHAPTER V

CONCLUSIONS

Mass communications technology, a field which has only recently begun to be explored and whose potentials are still but dimly perceived, offers a powerful means of educating large numbers of people at acceptable cost levels. Modern educational theory and practice offer important guidance in the proper use of these media. The issue is how best to combine the goals of technologically developing nations, the resources of other countries, and the mechanisms of mass communications and education in programs which promise increasing accomplishment. In answering this question, several things are important. First, a clear understanding must be gained of existing communications technologies, their possible uses, and their potential pitfalls, Second, an appreciation of modern educational theory must be acquired and applied to specific objectives such as basic intellectual skill training, population control, nutritional education, and maternal/child health. Third, these two fields must be integrated on a framework based on effective and creative change strategies. Our goal in this paper has been to overview each of these three areas.

Obviously no outsider can give dogmatic advice to an agency such as AID. Even if he had the power to effect actual decision making within the United States government, he could never claim to possess all of the necessary background information. Furthermore, program planning is a dynamic process. It is based not only on a given situation but also on the development of that situation over

time. Thus any attempt to draw cookbook recipes for the use of media in TDN educational programs is fruitless. We believe that this paper, which offers basic guidelines for decision making and summarizes much of the information on which these decisions should be based, is a viable alternative to irrelevant dogma.

The framework proposed here includes the following basic steps in creating a communications/education program for a technologically developing nation:

- Ascertain, through a cooperative decision making strategy, the specific educational objectives which will be addressed.
- Evaluate the existing communications resources and the potential for their use.
- Develop and expand those resources, and initiate programming for them, in such a way as to meet the maximum number of educational goals.
- Examine the feasibility of developing new communications technologies to attack those objectives which cannot be effectively addressed by existing resources.
- Experiment with alternative programs to achieve a common set of learning objectives.
- Incorporate a balance between mass and individualized delivery media within the overall project. When feasible, supplement basic material with a system of small study groups assisted by field workers. Do not rely solely on direct impact; include significant indirect and multiple purpose programming.
- Do not limit the mode of communications technology solely to information dissemination. Use media for tasks such as motivation, attitude change, and reinforcement.
- Avoid inflexible, unimaginative plans and budgets. Obtain a commitment of at least three years during which the programs will proceed without a final decision as to their future.

- Find the most sensitive evaluation instruments possible. Use quantitative evaluation with an understanding of its currently limited potential.

- At the end of the initial commitment period examine each of the alternative programs, ascertain success and failure, and develop a new series of programs (smaller in number) based on demonstrated achievement.

Of all the concepts that we have tried to convey, the one which we choose to reemphasize in conclusion is that of comfort versus success. The number of technological white elephants which are currently absorbing needed resources in a wide variety of developing countries is an indication of the dangers of attempting only that which has been attempted before, and of planning programs which do not challenge long-cherished assumptions. If we could offer only one piece of advice to a funding or planning agency, it would be to give the most consideration to those projects which try to do new things in new ways. The short-term risk of failure may seem greater; the long-range chance of success, however, is also higher.

During the time this paper was being written, a New York production of William Shakespeare's Much Ado About Nothing was being seen for the first time on American television. In one 3-hour period more people witnessed this classic than in all the centuries since it was first staged at the Globe Theater. A vast audience was given access not only to entertainment, but also to education. It is this potential which can and should be placed in the hands of technologically developing nations.